



United States Department of Agriculture
Forest Service

End of the World Project

Proposed Action

Salmon River Ranger District, Nez Perce – Clearwater National Forests, Idaho County, Idaho

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Figure 1. End of the World Project – Looking east toward South Fork Clearwater River (Z. Anderson)

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Contents

Contents.....	i
Vicinity of the Project Area.....	1
Healthy Forest Restoration Act Project.....	1
Requirements and Limitations for use of the Environmental Assessment under HFRA	2
Purpose and Need.....	3
Proposed Action	3
Process for Developing the Proposed Action.....	3
Concerns Raised During the Collaborative Process Prior to Scoping.....	4
Response to Collaborative Process	4
Proposed Activities.....	5
Harvest and Other Vegetation Treatments	5
Pre-commercial Thinning (1,169 acres)	5
Intermediate Harvest (17,382 acres).....	5
Regeneration Harvest (1,720 acres)	7
Campground and Dispersed Camping / Hazard Tree (51 acres)	8
Dry Meadow / Range Maintenance (82 acres)	9
Road 221 Fuel Break.....	9
Fuels Reduction (Post Vegetation Treatment).....	10
Natural Fuels Reduction.....	10
Natural Fuels Grass / Shrub Prescription	11
Natural Fuels Timbered Prescription.....	11
Noxious Weeds	14
Range	14
Road Work	15
Watershed and Aquatic Habitat Improvement.....	16
Watershed and Aquatic Habitat Improvement	16
End of the World Existing Condition.....	16
Management Areas (MA)	16
Management Area Overview	16
Vegetation	17
Vegetation Existing Conditions.....	18
Vegetation Existing Condition by Forest Vegetative Indicators	19
Fire and Fuels Management.....	22
History	22
Invasive Plant Species.....	23
Range	24
Recreation	25
Recreation Existing Condition	25
Roads (Transportation)	26
Existing Condition.....	26
Hydrology	30
Sediment.....	31
Water Quality	32
Equivalent Clearcut Area (ECA) and Road Density	33
Aquatics	34
Watershed Summary/History	34
Aquatic Species	35
Aquatic Habitats	35

Soils.....	37
Soils Existing Condition.....	37
Threatened and Sensitive Plant Species	37
Federally Listed Species.....	38
Sensitive Species	39
Heritage Resources	39
Heritage Resources Existing Condition.....	40
Wildlife	41
Wildlife Existing Conditions	41
Scenery and Eligible Wild and Scenic Rivers.....	46
Scenery Existing Condition	46
Eligible Wild and Scenic Rivers Existing Condition	50
Design Features and Mitigation Measures	51
Design Features.....	51
Mitigation Measures	52
Maps	55

List of Tables

Table 1: Harvest and Other Vegetation Treatments	11
Table 2: Proposed Harvest Units	12
Table 3: Proposed Openings Over 40 Acres	13
Table 4: Proposed Roadwork for End of the World Project.....	16
Table 5: Harvest Type and Acres Harvested by Decade	18
Table 6: Acres and Percent of Project Area by Cover Type (from VMAP data Layer).....	21
Table 7: Acres and Percent of Project Area by Tree Size (from VMAP data layer).....	22
Table 8: Fire History	22
Table 9: Project Roads by Maintenance Level.....	27
Table 10: Road Access Prescriptions	28
Table 12: Sediment Yield % over Base Guideline, Existing Condition % Over Base, and Proposed Action % over Base for End of the World Project Prescription Watersheds.....	32
Table 13: Existing and Proposed Action ECA and Total Road Density for End of the World Project HUC 12 Watersheds.....	34
Table 14: RHCA Existing and Proposed Action Road Densities.....	36
Table 15: Potential Sensitive Plants within the EOTW Project Area.....	39
Table 16: Forest Plan Standards for Cultural Resources	40
Table 17: End of the World Project - Probable Fisher Habitat	44
Table 18: End of the World Mitigation Measures	52

List of Figures

Figure 1. End of the World Project – Looking east toward South Fork Clearwater River (Z. Anderson)	1
Figure 2: Insect and Disease Designated Areas in Idaho	2
Figure 3: Shaded fuel break along the 444 Road.....	10
Figure 4: View looking west toward the Salmon River Breaklands from the ridgeline above the river. (D. Jones)	47
Figure 5: The South Fork of the Clearwater River flows through a narrow, steep canyon. At the top of the ridge above the river, the landscape transitions to rolling uplands. This view from	

John's Creek Trailhead also shows the extent of rock outcrops and other openings in the canyon. (D. Jones).....	48
Figure 6: Fish Creek Campground and Trailhead is located in the northern portion of the analysis area and is popular as an all season destination. (Photo credit: D. Jones).....	49
Figure 7: Past harvest area from the 1980s. These areas no longer have the appearance of an opening. (Photo credit: D. Jones)	49
Figure 8: This Google Earth image shows past harvest activities, existing travel corridors, recreation sites, and landscape features.....	50
Figure 9: End of the World Project - Proposed Actions.....	56
Figure 10: End of the World – Proposed Logging Systems Map.....	57
Figure 11: End of the World Project – WUI Map	58
Figure 12: End of the World Project – National Insect and Disease Risk Prediction Map	59
Figure 13: End of the World Project – Proposed Roadwork	60
Figure 14: End of the World Project – Proposed Watershed and Aquatic Habitat Improvement Map.....	61
Figure 15: End of the World Project – Past Harvest Map	62
Figure 16: End of the World Project – Current Insect and Disease Map	63
Figure 17: End of the World Project – Existing Vegetation.....	64
Figure 18: End of the World Project – Fire History Map.....	65
Figure 19: End of the World Project – Current Invasive Weed Inventory Map.....	66
Figure 20: End of the World Project – Invasive Plant Species Expansion Probability Map.....	67
Figure 31: End of the World Project – Current Range Allotments and Improvements Map	68
Figure 22: End of the World Project – HUC12 Watershed and Fish Presence Map	69
Figure 23: End of the World Project – Forest Plan Prescription Watersheds and Fish Presence Map.....	70

Vicinity of the Project Area

The End of the World Project is located approximately six (6) miles south of Grangeville, Idaho (see Figure 1). The project boundary encompasses about 49,565 acres within the Salmon River Ranger District of the Nez Perce - Clearwater National Forests. The project lies entirely within the Wildland Urban Interface (WUI) for the Grangeville area.

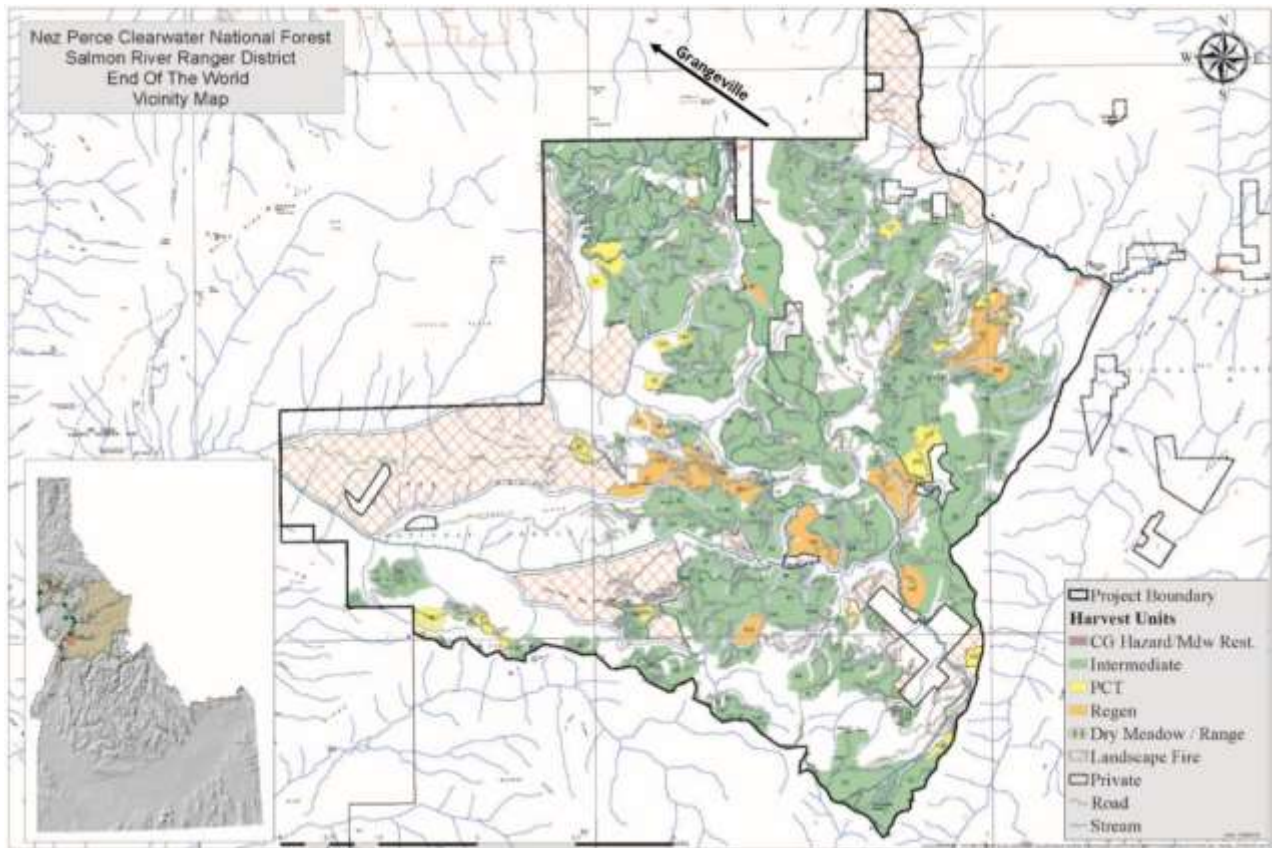


Figure 1: End of the World Project Vicinity Map

Healthy Forest Restoration Act Project

The End of the World project has the potential to be an Environmental Assessment (EA) under authority in the Healthy Forest Restoration Act (HFRA), as amended in 2014.

Section 8204 of the Agriculture Act of 2014 (Public Law 113-79) (also referred to as Farm Bill) amended Title VI of the Healthy Forests Restoration Act of 2003 (HFRA) (16 U.S.C. 6591 et seq.) to add Sections 602 and 603 to address qualifying insect and disease infestations on National Forest System lands. The Secretary of the U.S. Department of Agriculture delegated authority to implement the provisions of the Farm Bill to the Chief of the Forest Service on March 6, 2014.

Section 602 provides, in part, the opportunity for Governors to request designation to areas in their State that are experiencing, or at risk of, an insect or disease epidemic. The Forest Service received letters from 35 states requesting designations. These requests were reviewed to ensure they met at least one of the following eligibility criteria outlined in the Farm Bill:

1. Experiencing declining forest health, based on annual forest health surveys conducted by the Secretary;
2. At risk of experiencing substantially increased tree mortality over the next 15 years due to insect or disease infestation based on the most recent National Insect and Disease Risk Map (Figure 12 at end of this document) published by the Forest Service; or
3. In an area in which the risk of hazard trees poses an imminent risk to public infrastructure, health or safety.

Upon reviewing the States' requests, the Chief designated approximately 45.6 million acres of National Forest System lands across 94 national forests in 35 States. Over 6.6 million acres were designated in the Northern Region (1,708,628 million acres in Idaho; 4,955,159 million acres in Montana). These areas will be further evaluated to identify potential projects that reduce the risk or extent of, or increase resilience to, insect and disease infestations. Information on the request and designation process, by state, can be found at <http://www.fs.fed.us/farmbill/areadesignations.shtml>.

The End of the World Project area is designated as part of an insect and disease treatment program in accordance with Title VI, Section 602, HFRA, as amended by Section 8204 of the Agriculture Act (Farm Bill) of 2014.



Figure 2: Insect and Disease Designated Areas in Idaho

Requirements and Limitations for use of the Environmental Assessment under HFRA

- The project is in an area designated in accordance with section 602(b) of the Healthy Forest Restoration Act
- The purpose and need statement for a Title VI project should include a need to reduce the risk or extent of, or increase the resilience to, insect or disease infestation in a designated landscape area.
- The project is not located: in congressionally designated Wilderness and Wilderness Study Areas; in areas where the removal of vegetation is restricted or prohibited by statute or by Presidential proclamation; or in areas where the activities described above would be inconsistent with the applicable Land and Resource Management Plan.
- The project is being developed and implemented through a collaborative process that includes multiple interested persons representing diverse interests and is transparent and non-exclusive.

- The best available scientific information is being considered to maintain or restore ecological integrity, including maintaining or restoring structure, function, composition and connectivity.
- The project maximizes the retention of old growth and large trees, as appropriate for the forest type, to the extent that the trees promote stands that are resilient to insect and disease.
- Public notice and scoping will be conducted.

Purpose and Need

Based on observed existing conditions, as well as other supporting information (e.g. annual insect and disease aerial detection surveys, national insect and disease risk maps, community wildfire protection plan, and input from local community members), there is a need to:

- Reduce the risk or extent of, or increase resilience to, insect or disease infestation;
- Reduce wildfire risk to the local communities and surrounding federal lands;
- Restore forest vegetation, dry meadows, and grasslands to a healthy condition; and
- Improve water quality and aquatic habitats.

Opportunities exist in the project area to increase the resilience of the forest to insects, disease, and fire. The proposal includes timber harvesting, prescribed burning, permanent and temporary road construction, system road reconstruction, and watershed improvement activities. The proposed action includes 12 harvest units that create openings exceeding 40 acres in size.

Proposed Action

The actions proposed for this project must be in compliance with law, regulations and policy, to include the Nez Perce Forest National Land Management Plan (as revised, 1987). The Proposed Action and Proposed Logging Systems Maps can be found at the end of this document ([Figure 9](#) and [Figure 10](#))

Process for Developing the Proposed Action

The project area was chosen because it is very close to and used heavily by the community of Grangeville and surrounding areas. The forest in this area was heavily managed from the 1960s through the 1980s and is now overstocked, making it susceptible to insects, disease and increased risk of fire which results in a decreased ability to control fire when it occurs.

Timber, silviculture, and fire personnel surveyed the project area and identified potential stands for treatment. Several field trips to the project area were conducted to help the members of the interdisciplinary team better understand the need for treatment.

These potential stands were reviewed by specialists on the interdisciplinary team to identify resource-specific concerns. Concerns shared by participants in the collaborative process were also considered. Some stands or portions of stands that ranked high priority for treatment from a forest health or wildfire perspective were dropped due to other resource concerns, such as impacts to hydrology, logging operability, or archaeology/heritage.

Other considerations included determining areas of possible watershed improvement, dry meadow maintenance, noxious weed locations, and locations where fuel loading could be effectively reduced in the WUI (Please see [Figure 11](#) at the end of this document for WUI map).

Concerns Raised During the Collaborative Process Prior to Scoping

- Fuel loads on National Forest System lands bordering private property
- Impacts from clearcuts to visual and other resources
- Impacts from large, over-40 acre openings
- Impacts from increased traffic on area roads during logging operations
- Impacts of noxious weeds
- Road decommissioning – Is it possible to allow “grown-in” roads to be left alone?
- Roads – Impacts from new roads (potential increase in sediment)
- Roads open to the public – will they be left open?
- Prescribed fire – will neighbors be notified ahead of time?
- Future timber sales need to be a variety of sizes to encourage competition
- Restoration opportunities such as road decommissioning, culvert removal/replacement, dry meadow enhancement, riparian fencing, and road work
- Potential sediment delivery impacts in the South Fork Clearwater

Response to Collaborative Process

In response to issues/concerns raised during the collaborative process up to this point (prior to scoping), the interdisciplinary team has already taken or is taking the following actions:

- Where feasible, fuel loads would be reduced along private property and other areas in the WUI within the project area.
- Regeneration Harvests (Clearcut with Reserves, Shelterwood Harvest, Seed Tree) would be designed to:
 - Convert stands to more disease or fire resilient tree species, where appropriate, adding diversity in the project area.
 - Protect the riparian areas and streams and provide forage for wildlife.
 - “Blend” into the landscape in sensitive viewsheds.
- Openings larger than 40 acres would be created, and would be designed to consider wildlife movement corridors, watershed protection, and visual impacts in their design.
- Logging traffic would be estimated during the environmental assessment.
- Noxious weed locations have been noted through ongoing surveys. Design features (as outlined in the Design Feature and Mitigation Measure sections of this document) for minimizing the spread of noxious weeds would be enacted. Actual weed spraying to control or eradicate noxious weeds is authorized under the Nez Perce Forest Noxious Weed Control Program Environmental Assessment (1988).

- Grown-in, brushed-in roads would be left in that condition if they are hydrologically stable.
- Authorized roads would remain open to the public.
- Watershed restoration and sediment reduction opportunities have been identified and are described within the proposed action.

Proposed Activities

The project area (49,565 acres) was evaluated by staff specialists and after applying laws, policies, forest plan standards, design features, and mitigation measures resulting in a proposed treatment acreage of 28,162 acres within the project area. Activities proposed include: timber harvest, timber stand improvement, road construction, improvement and decommissioning, trail maintenance and improvement, aquatic organism passage improvement, fuels reduction, dry meadow/range maintenance, and prescribed fire to reduce activity fuels via pile burning or underburning, and non-harvest related prescribed natural fire.

Harvest and Other Vegetation Treatments

Harvest and other vegetation treatments are summarized in Table 1. Treatments for specific proposed units and expected resource benefits are displayed in Table 2. **Openings greater than 40 acres, created by a unit or combination of units are proposed (Table 3). This initial scoping documentation of the proposed creation of these openings constitutes public notification.** Overarching prescriptions for vegetative treatments include:

Pre-commercial Thinning (1,098 acres)

This prescription would be applied to young forest stands aged approximately 15-35 years that have naturally regenerated or been planted. Dominant and codominant “crop trees” (the largest and best growing trees) can be distinguished in the stand. Age: ranges from 15-35 years; density is 300-2000 trees/acre.

ACTION:

Thin “from below”, removing the smaller, poorer-quality intermediate and suppressed trees. Leave the largest, best-quality, healthiest trees in the dominant and codominant crown classes. Retain approximately 250-300 trees per acre. The treatment is not “commercial”, and does not produce products of commercial value, but may be large enough for posts and poles.

RESULT OF THE ACTION:

Similar to weeding a garden and leaving the best crop individuals, this treatment leaves a fully-stocked stand, with increased growing space and less competition for available nutrients, sunlight, and water. Since this is an intermediate treatment in the forest stand’s growing cycle, the stand is not being started over with new seedlings. The remaining sapling tree canopy should be full enough to limit the amount of sunlight reaching the forest floor, thus inhibiting new natural seedling growth which would cause repeated overcrowding.

Intermediate Harvest (17,099 acres)

One of four types of prescriptions (Commercial Thinning 1, Commercial Thinning 2, Variable Density Thinning, or Overstory Removal) may be applied to forest stands ranging from 25-150 years that have naturally regenerated or been planted.

Commercial Thinning 1

EXISTING CONDITION:

The Commercial Thinning Type 1 Stand had a past clearcut or other regeneration harvest at some time during the last 65-70 years. At the time of harvest, a new forest stand was initiated, either by planting or by natural regeneration. Age ranges from 25-65 years; density is 300-1200 trees/acre.

ACTION:

Commercially thin “from below”, removing the smaller, poorer-quality intermediate and suppressed trees. Leave the largest, best-quality, healthiest trees in the dominant and codominant crown classes. Leave approximately 80-140 trees per acre, favoring the largest, best quality, healthiest trees in the dominant and codominant crown classes.

RESULT OF THE ACTION:

Similar to weeding a garden and leaving the best crop individuals, this treatment leaves a fully-stocked stand, with increased growing space and less competition for available nutrients, sunlight, and water. Since this is an intermediate treatment in the forest stand’s growing cycle, the stand is not being started over with new seedlings. The remaining sapling tree canopy should be full enough to limit the amount of sunlight reaching the forest floor, thus inhibiting new natural seedling growth. These activities could help to moderate fire behavior when wildfires occur.

Commercial Thinning 2

EXISTING CONDITION

The Commercial Thinning Type 2 stand is a previously-harvested area which was “high-graded” (only the most valuable trees were harvested), or an unharvested area of immature to mature sawtimber. If previously-harvested, a new young stand was not initiated at the time of harvest. Overstory age ranges from 40-150 years.

ACTION

Commercially thin “from below”, removing the smaller, poorer-quality intermediate and suppressed trees. Leave the largest, best-quality, healthiest trees in the dominant and codominant crown classes. Leave approximately 80-140 trees per acre.

RESULT OF THE ACTION

Same as Commercial Thinning 1 prescription. These activities could help to moderate fire behavior when wildfires occur.

Variable Density Thinning

EXISTING CONDITION

A previously-harvested area which was “high-graded” (only the most valuable trees were harvested), or an unharvested area of immature to mature sawtimber. If harvested, a new young stand was not initiated at harvest time. Overstory age ranges from 40-150 years.

ACTION

Commercially thin “from below”, removing the smaller, poorer-quality intermediate and suppressed trees. Leave the largest, best-quality, healthiest trees in the dominant and codominant

crown classes. Leave an average of 80-140 trees per acre. This type of thinning is similar to a regular commercial thinning, but the unit would include some small harvested openings due to the potential removal of groups of insect and disease-affected trees and overmature patches of lodgepole pine, subalpine fir, or grand fir.

RESULT OF THE ACTION

A harvested stand would be heterogeneous in appearance, with areas of complete forest cover interspersed with small openings. As with commercial thinning, these activities could help to moderate fire behavior when wildfires occur.

Overstory Removal

EXISTING CONDITION

A previously-regenerated stand, having been treated with a clearcut, seedtree, or shelterwood regeneration harvest. The stand has full understory stocking with new seedlings or saplings. The residual mature overstory trees are affected by insects or diseases, and need to be removed to limit infection in the residual stand.

ACTION

Remove all remaining unhealthy overstory trees in the unit.

RESULT OF THE ACTION

A young healthy seedling or sapling stand which would be resistant to insects and diseases.

Regeneration Harvest (1,720 acres)

One of three types of prescriptions (Clearcut with Reserves, Shelterwood, or Seed Tree) may be applied to forest stands ranging from 100+ years old. These stands all typically have some down woody debris, snags, and a lack of recent fires.

Clearcut with Reserves

The health of four types of forest stands (Mature/overmature grand fir and Douglas-fir, Mature/overmature lodgepole pine, Mature/overmature lodgepole pine and mixed conifer, and Mature/overmature ponderosa pine or ponderosa pine/Douglas-fir) that would benefit from a Clearcut with Reserves harvest. The structure of these stands includes varying amounts of understory and midstory, with large trees dominating the overstory. These stands are experiencing insect and disease issues.

ACTION

Clearcut, leaving an average of 6-10 large overstory reserve trees/acre in the dominant or codominant crown classes. Leave the largest, healthiest trees with the best form.

RESULT OF THE ACTION

The initiation of a new generation of seedlings through planting would begin a new young forest stand of more disease and fire-resilient tree species. Activities would also create short-term (20 year) openings where fire behavior may be moderated when a wildfire occurs. Young forests are also less susceptible to burning during a wildfire.

Shelterwood

The health of three types of forest stands (Mature/overmature grand fir and Douglas-fir, Mature/overmature lodgepole pine and mixed conifer, and Mature/overmature ponderosa pine or ponderosa pine/Douglas-fir) that would benefit from a Shelterwood Harvest. The structure of these stands includes varying amounts of understory and midstory, with large or very large trees dominating the overstory. These stands are experiencing insect and disease issues.

ACTION

Shelterwood regeneration harvest, leaving an average of 15-40 large overstory reserve trees/acre in the dominant or codominant crown classes. Leave the largest, healthiest trees with the best form.

RESULT OF THE ACTION

Same as Clearcut with Reserves.

Seed Tree

The health of three types of forest stands (Mature/overmature grand fir and Douglas-fir, Mature/overmature lodgepole pine and mixed conifer, and Mature/overmature ponderosa pine or ponderosa pine/Douglas-fir) that would benefit from a Seed Tree Harvest. These stands all typically have some down woody debris, snags, and a lack of recent fires.

ACTION

Seedtree regeneration harvest, leaving an average of 8-15 large overstory reserve trees/acre in the dominant or codominant crown classes. Leave the largest, healthiest trees with the best form.

RESULT OF THE ACTION

Same as Clearcut with Reserves.

Campground and Dispersed Camping / Hazard Tree (51 acres)

EXISTING CONDITION

This treatment would be applied in the Fish Creek Meadows campground, the Fish Creek group site campground, and dispersed camping sites within the project area. These campgrounds and dispersed camping areas have been experiencing tree mortality due to pockets of insects, diseases, and unhealthy levels of tree encroachment to the recreational area as whole. This has caused a decrease in forest health and an increase for risk of wildfire in these highly used areas.

ACTION

Trees would be selected for removal where necessary to mitigate risk and promote health in residual trees. An emphasis would be placed on retaining the healthiest trees and removing trees affected by insects, root rot, or other issues.

RESULT OF THE ACTION

Dead, dying, unhealthy, and encroaching trees within the recreational areas may be removed from campgrounds and dispersed camping areas. This would reduce wildfire risk, while retaining healthy trees and maintaining long term forest health. An additional benefit would be increased public safety and usability of recreation areas.

Dry Meadow / Range Maintenance (82 acres)

EXISTING CONDITION

This treatment would be applied in natural openings and dry meadows (within units 1A, 32, 42, 56, 68, 70, and 89) that have not historically had trees on site, but have been experiencing tree encroachment in the last 30-50 years. Fire suppression policies have led to increased tree growth where natural fire regimes would have historically kept these areas open. These natural openings provide benefits on the landscape, and it is desirable to maintain their natural condition through selective vegetation management.

ACTION

Dry meadows selected for treatment contain little to no stream flow during the majority of the year and are usually wet only during the spring melt season. Trees would be cut from within and around the edges of openings and dry meadows to eliminate current tree encroachment. Treatments would focus on thinning and slashing small-diameter material by hand to avoid undesirable impacts from mechanical treatments in potentially sensitive areas. The majority of the material would be thinned and scattered on site to provide long-term nutrient cycling or would be piled and burned where fuel loading would be a concern if left on site. Commercial removal of trees is not expected in these areas.

RESULT OF THE ACTION

Tree encroachment in dry meadows and other openings would maintain natural openings on the landscape and create a natural mosaic that would better mimic fire regime patterns. Thinned material would be utilized where appropriate for long-term soil productivity. Dry meadow habitats and grazing opportunities would be maintained.

Road 221 Fuel Break

EXISTING CONDITION

Road 221, (also known as the Grangeville Salmon Road) runs through the center of the project area. This is the major road system providing access from Grangeville to the Salmon River through the Forest. The stands of trees next to this road system are generally very dense (overstocked) and present a safety risk for both the public and firefighters in case of fire.

ACTION

The majority of fuel treatments overlap with harvest units. In these areas, unit prescriptions would be modified within two tree heights of the road. Density of trees retained may be less near the road, gradually attaining the desired density within the remaining unit. Emphasis would be on retaining fire-resistant species of the largest size available.

RESULT OF THE ACTION

A shaded fuel break would be created that would provide safer ingress and egress for the public and fire fighters in case of wildfire. It would also provide additional opportunities for wildland firefighters to control or stop an advancing wildfire.



Figure 3: Example of a shaded fuel break created along the 444 Road during a 2017 fire.

Fuels Reduction (Post Vegetation Treatment)

Prescribed fire would be used after harvest, where feasible, to reduce the amount of activity-generated fuels and prepare the sites for replanting or natural reseeding. The proposed activities would implement fuels reduction within vegetation treatment units to accomplish fuels objectives. Treatments would include mechanical removal of trees, hand slashing, hand piling, pile burning, underburning, broadcast burning, and mechanical slash treatments. The mechanical slash treatments may include excavator piling and whole-tree yarding.

A light/moderate surface fire would be used to remove activity fuels generated from harvest activities. Some overstory mortality would occur, but would be limited to less than 10% of the residual stand. Fire treatment is expected to stimulate growth of grass, forb, and shrub species, as well as, generate spots for natural and/or artificial regeneration of trees. Effectiveness of surface fuels treatment(s) is expected to last for 5-10 years following fire application. It is expected that 30-90% of the treatment areas would be burned, leaving some smaller areas untouched by prescribed fire. Pile burning, jackpot burning and broadcast burning would occur when conditions are favorable for fuel consumption with little risk of escaped fire.

Natural Fuels Reduction

Natural Fuels prescribed burning is proposed on approximately 7,891 acres. The proposed activities would reduce the level and continuity of hazardous fuels in the project area and adjacent

to private property. This would trend the project area landscape toward a more fire resilient condition, and reduce the risk of loss of life, property, and resources from large wildfires within the project area.

Prescribed burning is proposed in two types of natural fuels (grass/shrub and timber). The treatments are designed to remove surface fuels and the majority of the ladder fuels, thus raising the height from the ground to the tree canopy, which would inhibit surface flames from readily moving into the tree crowns.

Natural Fuels Grass / Shrub Prescription

A light/moderate surface fire would be used to remove fuel accumulations from grasses, forbs, and brush species. The effectiveness of the fuel treatment is expected to last for 1-3 years after prescribed fire treatment. The treatment(s) would help stimulate new growth in the annual/perennial grasses, forbs and brush species. Application of fire, in conjunction with strategically placed weed treatments, are expected to help favor native grass, forbs, and brush species. Larger treatment units would be broken into smaller, more manageable units that could be treated at different times over several years. Natural and previously constructed barriers to fire movement (where present) as well as constructed handlines, would be used for perimeter control. It is expected that 90-95% of the treatment areas would be burned, leaving some small areas untouched by prescribed fire. Burning would occur when conditions are favorable for fuel consumption and a positive response from native species would occur (early summer, late summer, or fall).

Natural Fuels Timbered Prescription

A light/moderate surface fire would be used to remove natural fuel accumulations from grass, forbs, shrub, and timber stands. Some isolated pockets of high-intensity fire would occur where heavy surface fuels and closed-canopy timber are present. Generally, mortality of overstory would be limited to 15% or less, of the treatment unit. Fire treatment is expected to reduce natural fuel accumulations in the understory, including ladder fuels, in order to reduce the risk of fire transitioning from a ground to a crown fire. Effectiveness of fuel treatment is expected to last for 5-15 years, depending on slope, aspect and tree species present. It is expected that 60-80% of the proposed treatment area(s) would be burned over several years, leaving a mosaic of fire effects, including some unburned areas. Fire treatment(s) are expected to function as a thinning agent in both the understory and overstory of timbered areas, while promoting regeneration of native grasses, forbs, and fire-tolerant overstory tree species.

Burning would occur when conditions are favorable for fuel consumption and a positive response from native species would occur (early summer, late summer, or fall). Some treatments may occur in spring where heavy fuel accumulations exist. These spring entries would be utilized to “pretreat” areas, prior to the larger landscape ignition occurring.

Table 1: Harvest and Other Vegetation Treatments

Treatment Type	Quantity	Acres
Potential Pre-Commercial Thinning		Total 1,098
Intermediate Harvest (Commercial Thin)		6,339
Intermediate Harvest (Variable Density Thin)		10,636
Intermediate Harvest (Overstory Removal)		124

Intermediate Harvest Total		Total 17,099
Regeneration Harvest (Clearcut with Reserves)		977
Regeneration Harvest (Shelterwood Harvest)		631
Regeneration Harvest (Seed Tree Harvest)		112
Regeneration Harvest Total		Total 1,720
<i>Over-40 acre Openings (see Table X)</i>	<i>12 Units</i>	<i>Range from 44 to 287</i>
Campground/Hazard Tree		Total 51
Dry Meadow/ Range Maintenance		Total 82
Fuels Reduction (Post Vegetation Treatment)		Up to 18,819
Natural Fuels Reduction (Prescribed Burning)		Total 7,891

Table 2: Proposed Harvest Units

Units	Treatment*	Resource Benefits							
		Increase Resilience to Insect and Disease	Manage Fuels in WUI	Improve Big Game Forage	Provide Wood Products	Characteristic Patch Size/openings	Manage for Large size Trees	Remove Tree Encroachment	Mitigate Hazard Trees
1E, 4, 5, 7, 9, 24A, 24B, 27, 36C, 37A, 37B, 60, 62, 63, 65, 70, 73, 74A, 76, 77, 79, 80, 82, 83, 84, 85, 86A, 87, 88, 89, 90, 93A, 94, 96, 97, 98, 103, 104, 105, 111, 112, 113, 114, 116, 120, 122, 126, 128, 130, 131, 132, 133B, 134, 141, 142, 144, 145, 146, 147, 154, 160, 169	Commercial Thin	X	X		X		X		
1B, 29C, 148	Overstory Removal	X	X		X				X

Units	Treatment*	Resource Benefits							
		Increase Resilience to Insect and Disease	Manage Fuels in WUI	Improve Big Game Forage	Provide Wood Products	Characteristic Patch Size/openings	Manage for Large size Trees	Remove Tree Encroachment	Mitigate Hazard Trees
1A, 1C, 3, 6, 8, 10, 11, 12A, 13, 15A, 18A, 19, 20, 22, 23A, 23B, 24C, 25, 26A, 28, 29A, 29B, 30, 31, 32, 35, 38B, 39A, 39B, 42, 43, 44, 46, 47, 48, 49, 50B, 51, 54, 56, 57, 58, 59, 61, 69, 92, 99, 102, 110, 123, 124, 125, 129A, 138, 139, 140, 151A, 151B, 152	Variable Density Thin	X	X	X	X	X	X		
66, 67	Campground / Hazard	X	X		X	X		X	
18B, 33, 34, 36A, 36B, 41, 93B, 133A, 157	Clearcut with Reserves	X	X	X	X	X	X		
16, 26C, 38A	Shelterwood	X	X	X	X	X	X		
1D, 50A	Seed Tree	X	X	X	X	X	X		
2, 15B, 15C, 17, 24D, 24E, 26B, 40, 64, 74B, 75, 81, 86B, 91, 95, 115, 117, 118, 119, 121, 127, 129B, 143, 150, 158, 159, 166	Pre-Commercial Thin	X	X						
F1, F3, F4, F6, F8, F10, F11, F14, F15, F16, F17	Fuels Treatment	X	X	X	X	X	X		

*Vegetation Treatment Units would receive post treatment fuels reduction and Fuels Treatment Units would receive grass/brush or timbered prescription fuels treatments as described previously.

Table 3: Proposed Openings Over 40 Acres

Unit	Unit Acres	Silviculture System
18B	88	Clearcut with Reserves
33	123	Clearcut with Reserves
34	74	Clearcut with Reserves
36A	94	Clearcut with Reserves
41	169	Clearcut with Reserves

Unit	Unit Acres	Silviculture System
93B	45	Clearcut with Reserves
133A	228	Clearcut with Reserves
157	127	Clearcut with Reserves
50A	81	Seed Tree
16	288	Shelterwood
26C	113	Shelterwood
38A	230	Shelterwood

Expected resource benefits for all units with openings greater than forty acres include economics, fuels, patch size, forest health, summer forage, and visuals.

Noxious Weeds

Known noxious weeds exist within the project area. Design features (displayed later in this scoping document) would comply with best management practices developed by the Forest Service for preventing the introduction and spread of noxious weeds. Successful application of prevention measures and mitigation measures are necessary to reduce the probability of weed infestation and establishment that can result from timber harvest, non-commercial site preparation, and prescribed fire activities. Any ground based spraying of weeds in the project area is authorized under the Nez Perce Forest Invasive Weeds Environmental Assessment (1988). Aerial herbicide use on open grasslands has been considered, but will not be part of the proposed action at this time.

Depending on post-prescribed fire conditions the following are proposed to mitigate the spread of Yellow Star-thistle and restore annual grass populations within native grasslands:

- Consecutive targeted prescribe fires to reduce seedbed where native bunchgrass communities are not intact.
- Additional bio-control releases in partnership with the Nez Perce Tribe bio-control center.
- Aerial restoration efforts of invasive annual grass communities often produces poor results; therefore, aerial seeding both native grass/forb and introduced annual grasses that stay greener, longer may be utilized if an effective seedbed can be achieved by prescribed fire, and funding is secured.
- If the Range Specialists are able to determine that aerial restoration of annual grasslands has an economically viable chance at success, then the following may be considered if available on the market:
 - Aerial application of US Environmental Protection Agency (EPA) classified bio-pesticides such as *Pseudomonas fluorescens* as a tool for the management of invasive annual grasses such as cheatgrass, medusahead, and ventanata. Presently, the only strain registered for use as a bio-pesticide in Region 1 is sold under the trade name D7® by Verdesian Life Sciences and is not being commercially produced.

Range

Additional fencing within the project area is proposed (if needed) to restore forest vegetation, meadows and grassland OR to maintain or improve water quality and aquatic habitats. Current fence locations would be evaluated for effectiveness following project activities. In areas where

natural barriers have been removed and the current location and extent (length) of fence becomes inadequate to provide control of livestock, new fencing may be installed.

To restore native bunchgrass grasslands and maintain or improve forage opportunities within the project area, prescribed fire is also proposed. Specific prescriptions are described in the Natural Fuels Reduction section (above). In these areas, prescribed fire would take place during plant dormancy to prevent plant mortality.

Trail Work

EXISTING CONDITION

This treatment would be applied to motorized and non-motorized trails throughout the project area. Highly used motorized trails include the Milner Trail which is part of a larger network of trails that connect from Fish Creek to the Salmon River offering over 60 miles of motorized travel. Additional non-motorized trails also exist within the project area. These trails have been experiencing tread stability and trail drainage issues. This has caused an increased risk of aquatic habitat and water quality issues in these highly used areas.

ACTION

Work may include trail restoration or reconstruction, bridge repair, reconstruction, or replacement, culvert replacement; stream crossing hardening, installation of new water bars/dips, tread delineation, and possible tread base stabilization to adequately support the designed trail use and minimize soil displacement.

RESULT OF THE ACTION

Installation of new water bars/dips, tread delineation and possible tread base stabilization improve watershed and aquatic habitat conditions. An additional benefit would be increased public safety and usability of recreation areas.

Road Work

The proposed actions would include maintenance, reconditioning, or reconstruction of haul roads, which includes work items like adding or replacing culverts, road realignment and template shaping, slump removal, roadway stabilization, brushing, and aggregate placement. Harvest related temporary road construction (15.6 miles) is proposed. All temporary roads would be decommissioned after use. There are also proposed reroutes of Forest Service Roads 9438E and 221K1 to help limit road effects to protect Fish and Goodwin Creeks. The reroutes would involve a total of 250' of new construction for each road. There would be no stream crossings on these roads. The reroutes would allow for 0.9 miles of streamside road decommissioning and the removal of one stream crossing. An additional 27.5 miles of road decommissioning is proposed to reduce road-related effects to streams and reduce long term road maintenance costs.

Decommissioning would result in reestablished forests on 112 acres of land. Road improvement activities would include the replacement of 5 culverts to provide for aquatic organism passage, installation of additional cross drain culverts, and hardening of 5 crossings associated with OHV use and cattle watering. Additional culvert replacements to improve drainage could occur but the total amount is not yet known. Table 4 displays the proposed road activities. A map ([Figure 13](#)) at the end of this document shows proposed roadwork associated with this project.

Table 4: Proposed Roadwork for End of the World Project

Treatment	Miles	Count
Temporary Roads	15.6	
Road Reroute New Construction	0.09	
Road Reconstruction	0.6	
Road Improvement <ul style="list-style-type: none">- Install additional cross drain culverts- Harden stream crossings for cattle/ATVs		43 5
Road Decommissioning	27.5	
Culvert Replacements for Aquatic Organism Passage		5
Culvert Removals (road decommissioning)		18

Watershed and Aquatic Habitat Improvement

Watershed and Aquatic Habitat Improvement

The decommissioning, culvert replacements, cross drain work, and stream crossing hardening previously described are the primary activities designed to improve watershed and aquatic habitat conditions.

In addition, riparian planting with native shrubs and cattle deterrent activities are proposed. Native shrubs would be planted along a 0.1 mile section of Fish Creek within the existing cattle enclosure at Girl Scout Camp. Hand planting of native shrubs would increase shade and cover for fish in this area. Activities to deter cattle from accessing a streamside area in Cabin Creek would include the falling of about 20 tall riparian trees and placing them (jackstraw fashion) near the stream to limit cattle access. The treatment area is about 400' long. A watershed and aquatic improvement map ([Figure 14](#)) can be found at the end of this document.

End of the World Existing Condition

Management Areas (MA)

Management Area Overview

Management Area allocations are specific to areas across the Nez Perce – Clearwater National Forests that have similar management needs and desired conditions. Each MA has a certain emphasis which will direct management activities on that piece of land. MAs are grouped into twenty six major categories, of which seven are present in the End of the World project area, these include MA10, MA12, MA16, MA17, MA19, MA20, and MA21.

Management Area 10 (MA10) – Approximately 183 Acres

This Management Area consists of lakes, lakeside lands, perennial streams, seasonally flowing streams supporting riparian vegetation, and adjoining lands that are dominated by riparian vegetation. The goals of this management area are to manage riparian areas to maintain and enhance their value for wildlife, fishery and aquatic habitat, and water quality. Timber management, grazing, and recreation are to give preferential consideration to riparian-dependent species on that portion of the management area "suitable" for timber management, grazing, or

recreation. These areas are included in their entirety within PACFISH Riparian Habitat Conservation Areas (RCHAs).

Management Area 12 (MA12) – Approximately 31,250 Acres

Management Area 12 consists primarily of forested lands. The goals of this management area are to manage for timber production and other multiple uses on a sustained yield basis; develop equal distribution of age classes to optimize sustained timber production; manage at levels and intensities consistent with the schedules described in the plan to provide for other multiple uses and resources; and manage for roaded natural recreation.

Management Area 16 (MA16) – Approximately 10,983 Acres

Management Area 16 consists of those lands on the non-classified portions of the Forest that provide winter habitat for deer and elk. These areas are primarily below 4,500 feet in elevation and have southern to western aspects. The goals of this management area are to improve the quality of the winter range habitat for deer and elk through timber harvesting, prescribed burning, and other management practices.

Management Area 17 (MA17) – Approximately 596 Acres

Management Area 17 consists of primarily forested lands that have a high to medium degree of visual sensitivity. Goals for this management area are to manage for timber production within the constraints imposed by the visual quality objectives (VQOs) of retention or partial retention while providing for other multiple uses and resources.

Management Area 19 (MA19) – Approximately 225 Acres

Management Area 19 consists of primarily non-forested grasslands and low- productivity timber lands. The goals of this management area are to provide for increasing or maintaining available forage for livestock grazing at levels and intensities described in the Plan. Livestock management will provide for other multiple uses.

Management Area 20 (MA20) – Approximately 5402 Acres

Management Area 20 consists of timber in condition classes of overmature sawtimber (150 years or older) or of immature stands (40-80 years) that will provide for replacement old-growth habitat. Goals for this management area are to provide "suitable" habitat (existing and replacement) for old-growth-dependent wildlife species. **The Project Area currently meets Forest Plan standards for old growth.**

Management Area 21 (MA21) – Approximately 857 Acres

Management Area 21 consists of timber stands in timber productivity classes 3 and 4 that are old-growth, grand fir-Pacific yew vegetative communities that have been identified as moose winter range. Goals for this management area are to manage the grand fir-Pacific yew plant communities to provide for a continuing presence of Pacific yew "suitable" for moose winter habitat.

Vegetation

To obtain the existing condition, VMAP data, a Forest Service Northern Region source of vegetation mapping based on satellite data, was collected and classified using the Region One Vegetation Council Existing Forested Vegetation Classification System. Polygons of like

vegetation were recognized, created, or re-identified through the current USFS compartmental mapping system. VMAP data was supplemented with 2017 field-collected Common Stand Exam plot data and qualitative field assessments. Other data sources for analysis of the existing vegetation condition include aerial photo (2017) interpretation with ground verification during field site visits (2017), annual Forest Health Protection (FHP) aerial detection surveys since 2001, field review by FHP specialists in 2017, the Forest Service Activity Tracking System (FACTS) database, and the Forest Service Geographic Information System (GIS) database.

Vegetation Existing Conditions

The forest vegetation of north-central Idaho displays strong diversity in both composition and structure. This diversity is attributable to climate, geology, and disturbance patterns (insects, diseases, fire history, and extreme weather events). These elements combine to create some of the most varied forest communities found in the Inland Northwest. Existing forest types occurring in the project area include cold subalpine fir, cool Engelmann spruce/grand fir, moderately-dry to moist mixed conifer, and dry ponderosa pine/Douglas-fir. Most unmanaged stands range from approximately 100 to 200 years of age, originating after stand-replacing fires. Some stands have legacy trees of 300+ years old. Some older trees exhibit multiple fire scars (>24" ponderosa pine and Douglas-fir).

Existing tree species include grand fir, Douglas-fir, Engelmann spruce, lodgepole pine, ponderosa pine, western larch, subalpine fir, and Pacific yew. Understory shrubs include ninebark, ocean spray, snowberry, grouse whortleberry, fool's huckleberry, big huckleberry, and Labrador tea. Beargrass and miscellaneous grasses and forbs are also common.

Past Timber Harvest

Past timber harvest records date to the 1940s. The total area harvested from 1940 to 2016 was 26,705 acres (Table 5). A map ([Figure 15](#)) at the end of this document shows past harvest activity.

Table 5: Harvest Type and Acres Harvested by Decade

Decade	Acres by Harvest Type	
	Regeneration	Intermediate
1940s	147	0
1950s	1,540	151
1960s	3,729	1
1970s	6,099	1,100
1980s	4,044	6,554
1990s	1,278	245
2000s	245	1,458
2010s	1	113

Decade	Acres by Harvest Type	
	Regeneration	Intermediate
TOTAL HARVESTED ACRES = 26,705	17,083	9,622

Insect and Disease Conditions

In the absence of fire, forest insects and diseases can accelerate or reset forest succession by affecting tree species, tree size, and stand density. Over the last 80-100 years, insects and diseases have replaced fire as the most prominent agents of change. Based on available data, it appears almost all of the project area, with the exception of natural openings and grasslands, is currently experiencing only endemic levels of insect and disease activity. In the past 75 years, 35% of the project area has been regenerated, and 19% has received intermediate harvest treatments. These young stands are healthier than the older stands, and less susceptible to epidemic levels of insect attacks and disease infestations. A map ([Figure 16](#)) at the end of this document shows current insect and disease activity.

Insects:

Bark beetles are the major insects that currently have scattered outbreaks in the project area. They include the fir engraver beetle in Douglas-fir and grand fir, mountain pine beetle in lodgepole pine and ponderosa pine, and Douglas-fir bark beetle. The presence of high tree densities in the project area make forest stands more conducive to bark beetle attacks. Overstocked susceptible species, primarily Douglas-fir, grand fir, lodgepole pine, and ponderosa pine will likely continue to attract forest insect pests. Damage by these causal agents will result in continued timber volume loss, and add to standing and ground fuels.

Diseases

The major forest disease threats in the project area include dwarf mistletoe in Douglas-fir and western larch, Indian paint fungus in grand fir, and Elytroderma needle cast in ponderosa pine. Without management, dwarf mistletoe and Indian paint fungus will continue to spread to susceptible species, growth of infected trees will continue to decline, and trees will eventually die. Elytroderma will continue to spread and cause growth loss in infected ponderosa pine trees. Mortality from Elytroderma needle cast is rare, but infection can predispose trees to bark beetle attack (Hoffman 2004a). Root disease was identified within small isolated pockets of grand fir and Douglas-fir, and will continue to infect these highly-susceptible species. Western gall rust was observed in lodgepole pine; stem cankers on pole or larger trees rarely kill the trees directly, but often contribute to stem breakage (Hoffman 2004b).

Vegetation Existing Condition by Forest Vegetative Indicators

The following discussion summarizes the changes in the existing condition from the anticipated conditions, if natural disturbance processes had been allowed to continue without interference. Indicators of this change include 1) forest cover type composition (species), and 2) forest structure (canopy layers and tree size classes).

Forest Cover Type (Species)

Introduction

The exclusion of wildfire, a naturally-occurring ecological process, from the area/landscape has resulted in a vegetative condition that did not historically exist in the area. This resulting condition, with its associated fuels buildup, poses an increased risk for catastrophic wildfire, which would subsequently affect specific resources including water quality, wildlife populations and habitat, and old growth. Forest composition can influence fires behavior and affect the vegetation in a stand. Certain tree species, such as western larch, ponderosa pine, and Douglas-fir have physical characteristics that allow them to be more resistant to fire. These are also the most fire-resistant and least shade-tolerant, while grand fir, Engelmann spruce, and subalpine fir are the least fire-resistant and most shade-tolerant (Smith and Fischer 1997) species in the area. Lodgepole pine is shade-intolerant and has little resistance to fire. Stands composed primarily of the more fire-resistant species have a better chance of surviving natural wildfire or prescribed fire.

Existing Condition

The forest species composition in the project area has changed over the last century, due primarily to fire exclusion and timber harvest. Acres that have burned annually have declined by 70+ percent (SFLA 1998). Past harvest has favored removal of the fire-tolerant overstory pine and retention of understory Douglas-fir and grand fir, the reverse of fire disturbance effects. As a result of fire suppression, extensive snag patches are no longer being created. The natural, very-frequent and frequent disturbance regimes have been altered, having a pronounced effect on the forest composition of the area. Specifically, shade-intolerant species, mainly ponderosa pine and western larch, have decreased, while shade-tolerant species are increasing in the area (SFLA 1998). Fewer acres of pure ponderosa pine stands currently exist than would have been anticipated under natural conditions. Much of the increase in canopy layers is due to growth of shade-tolerant species underneath and into the lower part of the existing forest canopy. The shade-tolerant species are not as well-adapted to the drier habitats, are more susceptible to drought and fire, and are less resistant to insects and diseases than the ponderosa pine-dominated forests that historically occurred here (Arno 1988, pp. 134-135). The change in forest composition is also important to wildlife species that are adapted to live in the historic forest conditions.

Past fire suppression and dispersed clearcut harvests have contributed to forest conditions and landscape patterns that differ from those that would have occurred in the absence of such actions. Past regeneration harvest units typically contain few large snags and lower amounts of coarse woody debris than untreated areas. Early- and late-successional forest stages have been reduced in extent and diversity of patch size. Movement corridors and diversity of wildlife cover are less available. Ladder fuels that can transition to crown fires are more abundant in most unharvested stands.

Mixed-conifer forest that would have been visited by mixed-severity fire, with resulting maintenance or regeneration of shade-intolerant species, is now two- or three-storied and more densely-stocked than natural. These stands are more subject to drought stress and pathogens.

Table 6 summarizes the existing forest cover in the project area (from the Forest Service Region 1 VMAP vegetation data layer).

Table 6: Acres and Percent of Project Area by Cover Type (from VMAP data Layer)

Species/Cover Type	Acres	Percent of Project Area
grand fir and shade-tolerant mixed conifer	22,208	44.8
subalpine fir and shade-tolerant mixed conifer	18	0
lodgepole pine and shade-intolerant mixed conifer	1,563	3.2
Engelmann spruce and shade-tolerant mixed conifer	2,471	5.0
ponderosa pine and shade-intolerant mixed conifer	11,755	23.7
Douglas-fir and shade-intolerant mixed conifer	2,463	5.0
western red cedar and shade-tolerant mixed conifer	390	0.8
Transitional Forest ¹	2,638	5.3
Hardwood Mix	96	0.2
Shrub	1,377	2.8
Herbaceous ²	4,121	8.3
Sparse Vegetation	397	0.8
Water	67	0.1
TOTAL	49,564	100%

¹Transitional Forest is vegetative cover transitioning between grassland and trees, thus, it has a mix of grasses, shrubs, and trees.

²Herbaceous cover types include grasslands, meadows, montane parks, herbaceous clearcuts, or barren soil.

Forest Structure (Canopy Layers and Tree Size Classes)

Introduction

Wildfire was historically important for maintaining a variety of forest structural stages across the project area. Fire exclusion and timber harvest have altered that structure over the last century. Stand density, both in canopy layers and basal area stocking, has increased (SFLA 1998). Single-canopied stands occupy fewer acres than historically. The loss of open, ponderosa pine-dominated stands is mostly attributable to fire exclusion. This exclusion has decreased the frequency of low-severity fires that historically maintained the area's natural forest structure, and has allowed shade-tolerant species to encroach on these stands, creating dense understories and midstories of live and ladder fuels in some areas. As the shade-tolerant species have increased, some of the stands that historically contained a single canopy layer have developed into dense stands with two or more canopy layers. Timber stand density (canopy layers, crown closure, and basal area per acre) is higher than would have been anticipated under natural processes in both mature stands and regenerating stands. Density in previously-harvested areas was further increased by high planting densities followed by some natural regeneration, and lack of precommercial thinning. Forest succession and fire suppression have resulted in declines in acreage of seedling and sapling structural stages, and declines in acreage of smaller (1-9") tree size classes. Timber harvest has resulted in the reduction of larger size classes (>20) and increase in the small to medium size classes.

Existing Condition

Average tree size varies depending on year of origin, tree species, and growing conditions. Approximately 2 percent of the analysis area consists of regenerating harvest units with tree diameters less than five inches, and 81 percent supports trees that are five inches diameter at breast height (DBH) or larger. The past harvest analysis indicates that 54 percent of the project area was harvested within the last 75 years (refer to the VMAP and Past Harvest tables above). The current structural analysis (exams and remote sensing) reveals that all of the past regeneration harvests have been successfully reforested. The regeneration-harvested acres are in the small- to medium-tree category (5-14.9 inches DBH), comprising 35 percent of the project area. Mature stands with trees of 20" or larger diameter comprise 10 percent of the project area.

Table 7 summarizes the existing forest structure (tree size classes) in the project area (from the Forest Service Region 1 VMAP vegetation data layer). A map ([Figure 17](#)) at the end of this document shows existing forest structure and size.

Table 7: Acres and Percent of Project Area by Tree Size (from VMAP data layer)

Tree Size Class	Acres	Percent of Project Area
DBH 0-4.9"	967	2.0
DBH 5-9.9"	2,530	5.1
DBH 10-14.9"	8,734	17.6
DBH 15-19.9"	23,773	48.0
DBH >= 20"	4,864	9.8
Transitional Forest	2,638	5.3
Deciduous	96	0.2
Shrub	1,377	2.8
Herbaceous	4,121	8.3
Sparse Vegetation	397	0.8
Water	67	0.1
TOTAL	49,564	100%

DBH is "Diameter at breast height"

Fire and Fuels Management

History

The project area's past fire history is indicative of the changes to the natural wildfire regime, resulting from wildfire suppression which began around 1930. Suppression has consequently altered the landscape in relation to fire and fuels. The number of acres burned per fire after 1930 were generally less than those occurring before 1930 (Table X), due to fire suppression. The one exception was seen during the Burnt Flats Fire in 2000 where initial attack was unsuccessful. The acres of this fire far exceeded the acres burned per year prior to 1930. The following table displays the area's fire history from 1889 to the present.

Table 8: Fire History

Fire Year	Fire Acres
Before Fire Suppression	
1889	1,447

1903	1,606
1910	285
1915	4
1919	2,289
1929	412
TOTAL	6,043
After Fire Suppression	
1967	7
1977	9
1985	6
1996	4
2000	12,680
2001	40
2005	1,123
2009	102
TOTAL	13,971

Recent wildland fires include the Burnt Flats Fire (2000), which started on adjacent State owned lands, and burned approximately 13,000 acres, in the western side of the project area. The fire primarily impacted the grasslands and open ponderosa pine stands in the Bentz and Pinnacle Ridge areas. The Blackerby Fire (2005), started on adjacent private lands and burned approximately 1100 acres in the northeast corner of the project area. This fire primarily impacted the open ponderosa pine/Douglas fir stands of the South Fork Clearwater River. About 60% of the project area has not experienced any large fire event, since 1919. A map depicting past fire occurrence ([Figure 18](#)) can be found at the end of this document.

Vegetative communities within the EOTW were historically shaped by low and mixed-severity fire, and featured ponderosa pine, Douglas-fir, western larch and some Englemann spruce. Bunchgrasses were prevalent on the warmest, driest sites. Fire suppression, forest succession and timber harvest have resulted in increases in shade tolerant and less fire resistant species. Insect and disease has affected many areas due to overstocked conditions and the predominance of tree species with a greater susceptibility to these pathogens and insects. The result are heavy fuel concentrations across the landscape, both as ground/surface and aerial (ladder) fuels. Surface fuels provide a conduit for a surface fire to transition into a crown fire via the ladder fuels.

The project area lies adjacent to private land on three sides. Values of concern include private homes, the municipal watershed for Grangeville, a ski area and many other improvements, both on the Forest and within the adjacent lands. The proximity of the End of the World landscape to values of concern and the current vegetative condition(s), present a high risk from a large wildland fire event when it occurs.

Invasive Plant Species

In general, the Forest is directed to implement an effective invasive species management program with the objectives of preventing the introduction and establishment of state-listed invasive species, hereinafter referred to as noxious weeds; containing and suppressing existing infestations; and cooperating with local, state, and other federal agencies in the management of

noxious weeds. As a result, existing noxious weed populations are well known in the project area. Where populations have been documented and/or treatments have occurred the data is accurate and reliable. However, it is expected that most weed occurrences are larger than existing documentation indicates.

Approximately 6 percent of the project area is currently infested with noxious weeds. Inventoried noxious weeds for the project area include (but are not limited to): Yellow Star-thistle (1,905 acres), Spotted Knapweed (649 acres), Canada thistle (402 acres), and Orange Hawkweed (95 acres). Some general occurrence of invasive species such as Cheatgrass, St. John's-wort and other "naturalized" invasive species can be assumed to occur on the roadsides and warmer, more open habitats. The largest existing weed occurrences are associated with Bluebunch Wheatgrass, Idaho Fescue, and Sandburg's Bluegrass south-facing grassland habitats. These are highly susceptible to Yellow Star-thistle invasion. A map ([Figure 19](#)) shows the current invasive plant inventory for the project area.

The expansion probability of invasive species takes into account the susceptibility, as determined by habitat type groups (HTG); as well as, known occurrence (seed source), site disturbance (fire/harvest/grazing) within the past 10 years and spread vector (adjacency to roads/trails). Modeling suggests that 9 percent the project area is considered high risk to invasive species invasion, while 33 percent of the project area is of moderate risk, 39 percent is of low risk, and 9 percent is considered to be closed, or not susceptible to invasion by invasive species. The invasive plant species expansion probability map ([Figure 20](#)) can be found at the end of this document.

The actions proposed in the End of the World project area would likely cause the spread of invasive species to some degree. However, this potential harm would be outweighed by the overall benefits to the watershed by hazardous fuels reduction from the proposed treatments. Large catastrophic fires are the greatest cause of large, fast, weed invasion and spread. Mitigation measures (described in the mitigation section below) would be implemented to minimize any harmful effects associated with the spread of invasive species.

Range

Grazing is an important use within the project area and has been ongoing for many decades. A map ([Figure 21](#)) depicting current allotments and range improvements is located at the end of this document.

There are four active allotments in the End of the World project area: White Bird Creek (99%), Peter Ready (29%), Butte-Gospel (1%), and Hungry Ridge (26%). These allotments support five term grazing permits (herein after referred to as "permittees").

An allotment management schedule is prepared annually with permittee input regarding the grazing rotation, and improvement work to be accomplished during the up-coming grazing season. Resource objectives serve as the basis for rotation formulation. Monitoring is set up and conducted by the Forest Service allotment administrators throughout the grazing season to ensure allowable use standards are not exceeded.

In general, permittees begin trucking onto National Forest Service lands or trailing from adjacent owned and/or leased private lands as range readiness occurs, with full numbers typically on the allotments by June 1. The cattle are placed on the lower more southerly elevation slopes first, consisting primarily of Bluebunch Wheatgrass, Sandburg's Bluegrass and annual grasses. Cattle

then progress to higher elevations as range readiness permits, with the entire herd leaving the spring range by late June. The majority of the cattle enter the cooler, still succulent timbered types by July. In September, fall precipitation and cooling of day-time temperatures dictate cattle use shifting from the timber to the open and steeper grassland steppe where present, so long as adequate fall moisture “softens” the forage resources, and recharges springs, or fills puddles for livestock to water. Cattle are gathered off the allotment to private ground prior to November 1st.

Each allotment is comprised of multiple pastures, each with a combination of fencing and/or natural barriers. In addition, riding and salting practices are also used to keep stock located in the proper locations, prevent utilization standards from being exceeded, and support a deferred rotation grazing system which is designed to alternate the time of year each pasture is grazed in consecutive years.

Within the project area there are approximately 13 miles of fence, and 13 water developments. These range improvements (fences and water developments) are located primarily on White Bird Creek Allotment and are maintained by the permittees.

The project area consists largely of grand fir closed canopy communities that are essentially devoid of forage vegetation and typically only produce 100 to 200 pounds to an acre of forage which is usually found along existing or abandoned roadways, small natural clearings, and meadows; as well as, open ponderosa pine with shrub and expansive grassland communities that support both herbaceous forage and browse up to one ton per acre.

Forage trends were assessed for uplands and riparian areas. Data from as early as the 1950’s was compared to more recent data (2000s). Data for two grassland steppe areas (Red Ridge & Bentz Ridge) suggest that condition is fair condition with an upward trend. Data for three riparian sites (Swartz Ridge, Goodwin Meadow, and Cabin Creek Meadow) suggests that plant density has increased over time. Condition ranges from good to excellent and either trending upward or static.

The proposed vegetation treatments are expected to result in increased transitional grazing opportunities, with no adverse effects to other aspects of livestock management as long as livestock can access the treated areas, and range improvements are protected. No issues have been identified with the majority of roads identified for decommissioning. Range improvements may be impacted by the proposed treatment. Coordination with permittees and Range Specialist is critical prior to rolling up any fence, or blocking access to water developments.

Recreation

Recreation Existing Condition

Recreational use is high within the project area, offering four seasons of recreational opportunity from Nordic skiing/snowmobiling in the winter months to summer camping and trails use from spring to fall. In general the area is used as a jumping off point for the community of Grangeville due to its relatively close vicinity to the town of Grangeville, ID.

Two developed campgrounds exist along with numerous dispersed camping opportunities. Eleven miles of Nordic groomed trails along with 20 miles of groomed snowmobile trails lie within the project area. Other highly used motorized trails include the Milner Trail which is part of a larger network of trails that connect from Fish Creek to the Salmon River offering over 60

miles of motorized travel. Other recreational activities include hunting, sightseeing, berry picking, and day hiking.

Recreation Opportunity Spectrum – Forest Plan

The Recreation Opportunity Spectrum describes recreation settings and opportunities, and is used to evaluate recreation potential for an area. The Nez Perce National Forest ROS inventory is described in the Forest Plan FEIS (1987), Chapter III, p. 8-9. Forest Plan Management Area Direction (III-38) for this area is to manage for Roaded Natural and Semi-Primitive Motorized recreation opportunities. They are briefly described below.

Roaded Natural

Roaded Natural includes any area within ½ mile of “better than primitive” roads (80% of project area). They are natural-appearing settings that may have modifications that range from being easily noticed to strongly dominant to the observers within the area; but from sensitivity level one and two travel routes, these alterations would remain unnoticed or visually subordinate. Highly designed roads or highways may be common. Encounters with other people are frequent.

Semi-Primitive Motorized

Semi-Primitive Motorized (20% of project area) areas are greater than 2500 acres and at least ½ mile of primitive roads or trails with motorized use, but no closer than ½ mile to “better than primitive” roads. Other people are occasionally encountered. Structures are rare and isolated. Within these settings, there are ample opportunities to practice outdoor skills and to achieve a feeling of self-reliance. Modifications to the landscape are subtle and would not draw the attention of an observer anywhere within the area. Motorized use is permitted.

Roads (Transportation)

Roads were constructed in the project beginning in the late 1950’s in order to provide access for timber harvest. About 83% of the roads were constructed by 1960 and the last permanent roads were built in 2000. The road system continues to provide access for vegetation management and also plays a very important role for recreation and fire suppression activities.

The history of the road system in the project area dates back to the late 1950’s for timber sales. Timber sales brought an additional surge in road construction in the later 1900’s.

Current road conditions are the result of these past decisions and activities, combined with ongoing maintenance, environmental impacts, and use. The road system within the project area includes inventoried National Forest System Roads (FSRs), decommissioned roads, and private roads. Many un-authorized user created routes also occur in the area but are not inventoried, and are not typically mapped. The proposed action includes 15.6 miles of harvest related temporary road construction. All temporary roads would be decommissioned after use. Please see Table 4 (above) for proposed roadwork.

Existing Condition

There are 314 miles of existing National Forest System Roads (FSR), 2.3 miles of State and County roads, and 2.3 miles of private roads in the project area. A total of 44 miles of Forest Service roads were decommissioned resulting in an existing Forest Service (FS) system, state, and private road density of 4.05 mi/mi². Please see [Figure 13](#) for a map of roads in the project area.

Approximately eighty-three percent (83%) of the roads were built on or before 1960.

The remaining seventeen percent (17%) of the roads in the project area were constructed between 1960 and 2000 for timber harvest. Roads constructed before ~1980 were commonly built to a lower design standard than would be used today. These roads are often un-surfaced. Roads constructed or reconstructed after 1980 are typically designed to a higher, and more current, design standard, and include aggregate surfacing. The project area includes 19.25 miles of paved roads, 74.19 miles of gravel surfaced roads, and 268.37 miles of unsurfaced roads.

Miles of Road by Maintenance Level

In general, the five Maintenance Levels (MLs) can be described as:

ML 1. These are roads that have been placed in storage between intermittent uses and are not open for use. Basic custodial maintenance is performed to prevent damage to adjacent resources. Emphasis is given to maintaining drainage features and runoff patterns. Road deterioration may occur at this level. Roads managed at this maintenance level are described as being in basic custodial care.

ML 2. These roads are open for use by high clearance vehicles. Passenger car traffic, user comfort, and user convenience are not considerations. Warning signs and traffic control devices are generally not provided. Motorists should have no expectations of being alerted to potential hazards while driving these roads. Traffic is normally minor, usually consisting of one or more of a combination of administrative, permitted, dispersed recreation, or other specialized uses. Roads managed at this ML are designed and/or maintained for high clearance vehicles.

ML 3. These roads are open and maintained for travel by a standard passenger car; however user comfort and convenience are not considered priorities. These roads are typically used at low speeds and have single lanes and turnouts.

ML 4. These roads provide a moderate degree of user comfort and convenience at moderate travel speeds. Most roads are double lane and aggregate surfaced. Some roads may be paved and/or dust abated.

ML 5. These roads provide a high level of user comfort and convenience. The roads are normally double lane and paved, such as the Grangeville-Salmon Road (FSR 221). Some roads may be aggregate surfaced and dust abated.

Table 9: Project Roads by Maintenance Level

Maintenance Level	Miles	Comments
5 – High Degree of User Comfort (Includes 20.9 miles of State Road)	19.22	Rds. 1863, 1863A, 221, & 4600
3 – Suitable for Passenger Cars (Includes 0.23 miles of County Road)	64.34	Rds. 1103, 1402, 2000, 2009, 2022, 2023, 2026, 243, 279, 4600, 479,

2 – High Clearance Vehicles	62.73	Rds. 103163, 1103A, 1103B, 1870, 2000A, 2000F, 2009A, 2009B, 2009C, 2021, 2024, 2026A, 221C, 221N, 221P, 221Q, 243A, 243B, 243E, 279C, 4600A, 4649, 479D, 479F, 641, 642, 642A, 642A1, 76886, 9301, 9301A, 9323, 9323A, 9323B, 9404, 9404B, 9419, 9419A, 9419B, 9419C, 9419D, 9420, 9422, 9423, 9424, 9424A, 9424B, 9425, 9426, 9426A, 9426B, 9450, 9465, & 9485
1 – Basic Custodial Care	170.29	All remaining roads
Private Roads	2.32	
Total Miles of Existing Roads	318.90	
Decommissioned (Re-contoured)	43.94	Roads may be shown on maps but have been re-contoured and are no longer considered National Forest Roads

Summarized from INFRA Roads Data Spreadsheet.

Current road conditions are the result of ongoing maintenance, weather and other environmental events, and use. Somewhat regular maintenance occurs on Level 3 through 5 roads. Minimal maintenance has been performed on Level 1 and 2 roads resulting in an overall maintenance backlog. The backlog is a result of reduced funding and personnel capacity to perform the maintenance. Recent reviews on project roads by the Nez Perce Tribe and Forest Service personnel have noted a number of potential impacts to watershed and streams as a result of deferred maintenance.

Miles of Road by Access Prescription

Access prescriptions are assigned to each road and range from “open year round to all motorized vehicles”, to “seasonal use”, to “closed year round”. Access restrictions are reviewed on occasion or as needed. Restricted roads are often used temporarily for administratively authorized contract work, planning, inventory, monitoring, and wildfire suppression.

All Maintenance Level 2, 3, and 5 roads are open to motorized vehicle use. Maintenance Level 1 roads are restricted from use by highway vehicles, but some allow use by trail vehicles $\leq 50'$ in width.

Table 10: Road Access Prescriptions

Road Access Prescription	Miles	Comments
Open Yearlong to All Vehicles (Includes 2.32 miles of State and County Roads)	71.49	Roads: 1100, 1103, 1103A, 1103B, 1401, 1402, 1863, 1863A, 1870, 2000A, 2000A, 2000F, 2009, 2009A, 2009B, 2009C, 2021, 2022, 2022, 2023, 2023, 2024, 2026, 2026A, 221, 221, 243A, 243B, 243C, 279, 279C, 398, 546, 641, 641, 642, 642A, 642A, 642A1, 642C, 76886, 76911, 76912, 76912A, 76913, 76914, 9422, 9450, 9485
(Y-4) Restricted Yearlong for Motor Vehicles $> 50'$ in width	27.03	Roads: 1103H, 1112C, 1112C3, 1856, 1856, 1856A, 1856B, 1856B1, 1856C, 1856D, 2022A, 2023A, 2023B, 243H, 279E, 279G, 279G2, 641, 641, 76667, 9452, 9452B,

Road Access Prescription	Miles	Comments
		9452C, 9453, 9468, 9469, 9470, 9470A, 9470B, 9470C, 9485C
(Y-2) Restricted Yearlong for All Motor Vehicles	141.05	1103B1, 1103D, 1103H1, 1113, 1113A, 1870B, 1870C, 2000B, 2000B1, 2000C, 2000D, 2000E, 2021A, 2021A1, 2021A2, 2022B, 2022B1, 2023B1, 2023C, 2023D, 2026B, 2026C, 2026C1, 221K, 221K1, 221L, 243A1, 243F, 279D, 279F, 279H1, 279J, 279K, 4600B, 4600C, 4600D, 479B, 479B1, 479B2, 479C, 479E, 479G, 479G1, 479G2, 479G3, 641C, 641C1, 641D, 641D1, 642B, 76210, 76227, 76227A, 76227B, 76228, 76228A, 76228B, 76228B1, 76228C, 76230, 76231, 76256, 76257, 76258, 76259, 76260, 76261, 76262, 76263, 76264, 76267, 76268, 76268A, 76268B, 76269, 76270, 76271, 76272, 76273, 76273A, 76285, 76307, 76308, 76309, 76309A, 76367, 76368, 76369, 76369A, 76385, 76386, 76654, 76659, 76660, 76661, 76661A, 76661B, 76662, 76663, 76664, 76665, 76666, 76668, 76669, 76669A, 76669B, 76669C, 76669D, 76672, 76673, 76674, 76675, 76676, 76677, 76678, 76679, 76681, 76681A, 76682, 76682A, 76683, 76684, 76685, 76686, 76688, 76689, 76690, 76690A, 76691, 76692, 76692A, 76694, 76695, 76696, 76696A, 76701, 76702, 76703, 76704, 76705, 76705A, 76705B, 76707, 76707A, 76709, 76710, 76711, 76711A, 76711A1, 76711A2, 76712, 76713, 76714, 76715, 76715A, 76716, 76717, 76718, 76719, 76720, 76721, 76722, 76723, 76724, 76725, 76726, 76727, 76729, 76729A, 76730, 76730A, 76731, 76731A, 76732, 76733, 76734, 76734A, 76735, 76735A, 76736, 76745, 76746, 76747, 76748, 76749, 76750, 76751, 76752, 76753, 76754, 76754A, 76818, 76818A, 76818A1, 76819, 76821, 76821A, 76840, 76841, 76842, 76843, 76844, 76844A, 76852, 76853, 76854, 76854A, 76855, 76857, 76858, 76866, 9301B, 9301C, 9302, 9302A, 9302A1, 9302A2, 9302B, 9323C, 9340, 9347, 9347A, 9404A, 9419, 9419E, 9439, 9439, 9439A, 9439B, 9439C, 9439D, 9439E, 9461, 9467, 9467A, 9467A1, 9468A, 9468A1, 9468B, 9468C, 9469A, 9469B, 9485C, 9485F
(W3-B) Restricted 12/1 – 4/1 Trail & Hwy Vehicles Allow Snowmobiles	44.57	2000, 2000, 221, 221, 221C, 221P, 221Q, 4600, 4600, 4600A, 4649, 479, 479, 479, 479D, 479F, 641, 9404, 9404B, 9419, 9419A, 9419B, 9419C, 9419D
(W3-C) Restricted Motor Vehicles > 50"	12.19	221, 243, 243E, 243G, 642, 642, 9323, 9323A, 9323B
(C-2A) Restricted 9/15 – 6/15 for All Motor Vehicles	1.85	9465
(C-3) Restricted Highway & Trail Vehicles – Allow Snow Vehicles	4.09	9301, 9301A
(C-4) Restricted Highway & Trail Vehicles > 50" in width	14.59	9420, 9423, 9424, 9424A, 9424B, 9425, 9426, 9426, 9426A, 9426B

Road Access Prescription	Miles	Comments
Private	2.04	
Total Miles of Existing Roads	318.90	
(B) Decommissioned (Re-contoured) Roads may be shown on maps but have been re-contoured and no longer considered National Forest Roads	43.94	1112B, 1112B1, 1112C1, 1112C2, 1112C4, 2021, 221J, 9301, 9301, 9341, 9443, 9443A, 103174A, 1103G, 1103G, 1103G1, 1112, 1112A, 2022, 2022C, 2023A, 2023A1, 2023A1, 2023B, 279G, 279G1, 279G2, 279H, 279H, 76254, 76254A, 76255, 76255A, 76255A1, 76255A2, 76255A3, 76255A4, 76364, 76680, 76687, 76687A, 76693, 76697, 76698, 76699, 76700, 76700A, 76706, 76708, 76708A, 76708B, 76709A, 76737, 76738, 76739, 76740, 76741, 76741A, 76856, 9452, 9452A, 9453, 9470

Summarized from INFRA Roads Data Spreadsheet

Decommissioned roads do not allow any motor vehicle use. Access on Private roads is regulated by the land owner or other legally granted authority, so no prescription is shown. The table above includes them because they may be shown on the maps.

Based on field review, many of the restriction devices on roads have been found to be ineffective at preventing unauthorized access. Repair of these devices falls under normal road maintenance and will not be addressed as part of this project.

Hydrology

United State Geologic Survey (USGS) Hydrologic Unit Code 12 (HUC12) and Forest Plan prescription watersheds and their acreages are described in Table 11. Effects to water quality, water yield, and watershed condition are analyzed for these watersheds. Maps ([Figure 22](#) and [Figure 23](#)) at the end of this document display HUC12, Prescription Watersheds, and Fish Presence within the project area.

There are 17 prescription watersheds within the project area, as described in the Nez Perce Forest Plan, Appendix A. The South Fork Clearwater River Face prescription watershed is not a “true” watershed, as it includes several small, face drainages adjacent to Highway 14.

These prescription watersheds are located within three larger USGS HUC12 watersheds. Grouse Creek-S. Fork Clearwater River USGS HUC12 watershed is not a “true” watershed, as it contains watersheds located north of the S. Fork Clearwater River and was re-delineated to form a “true” watershed by excluding watersheds located north of S. Fork Clearwater River.

Table 11: HUC12 and Forest Plan Prescription Watersheds for the EOTW Project

USGS HUC12 Watershed	FP Prescription Watershed	FP Prescription Watershed ID	Area (ac)
N. Fork White Bird			21,105
	Fish Creek	170602090103	5,757
	Goodwin Creek	170602090105	715
	Goose Creek	170602090102	3,023
	N Fork White Bird Creek	170602090101	10,051
	Tollgate Creek	170602090104	1,561
S. Fork White Bird			22,938
	Asbestos Creek	170602090109	1,681
	Cold Springs Creek	170602090108	1,087
	Jungle Creek 3/	170602090110	1,155
	Little White Bird Creek 3/	170602090111	3,425
	Pinnacle Creek 3/	170602090106	2,518
	S Fork White Bird Creek	170602090107	13,072
Grouse Creek - S. Fork Clearwater River*		HUC12 acres	17,371
	Bivouac Creek	170603050121	411
	Bully Creek	170603050123	3,471
	Cove Creek	170603050125	3,606
	Dump Creek	170603050124	1,300
	Grouse Creek	170603050120	3,556
	Jungle Creek	170603050122	286
	S Fork Clearwater Face	170603050199	3,783

3/ As noted in Forest Plan Appendix A, sediment is the primary limiting factor for these watersheds. Timber management can occur in these watersheds, concurrent with improvement efforts, as long as a positive, upward trend in habitat carrying capacity is indicated.

* USGS HUC12 Grouse Creek-S. Fork Clearwater River was re-delineated to form a true watershed (17,371 acres) by excluding watersheds located north of S. Fork Clearwater River.

Sediment

The Forest Plan prescription watersheds have assigned Water Quality Objectives, which range from 30% to 70% over base (natural) sediment yield as estimated by NEZSED, the Forest's version of the R1R4 sediment yield guide (Cline et al. 1981). As shown in Table 12, existing sediment yield as estimated by NEZSED ranges from 0% to 24% over base, indicating all prescription watersheds currently meet their assigned sediment yield guideline.

Table 12: Sediment Yield % over Base Guideline, Existing Condition % Over Base, and Proposed Action % over Base for End of the World Project Prescription Watersheds

USGS HUC12 Watershed	FP Prescription Watershed	FP Prescription Watershed ID	Sediment Yield Guideline % over Baseline	Existing Sediment Yield % over Baseline	Proposed Action Sediment Yield % over Baseline*
N. Fork White Bird					
	Fish Creek	170602090103	60%	0%	16%
	Goodwin Creek	170602090105	60%	1%	20%
	Goose Creek	170602090102	60%	4%	46%
	N Fork White Bird Creek	170602090101	30%	1%	16%
	Tollgate Creek	170602090104	60%	0%	15%
S. Fork White Bird					
	Asbestos Creek	170602090109	55%	6%	29%
	Cold Springs Creek	170602090108	60%	9%	30%
	Jungle Creek 3/	170602090110	60%	24%	56%
	Little White Bird Creek 3/	170602090111	35%	1%	23%
	Pinnacle Creek 3/	170602090106	30%	0%	28%
	S Fork White Bird Creek	170602090107	30%	3%	27%
Grouse Cr - S. Fork Clearwater					
	Bivouac Creek	170603050121	70%	10%	30%
	Bully Creek	170603050123	60%	9%	59%
	Cove Creek	170603050125	60%	6%	52%
	Dump Creek	170603050124	60%	9%	60%
	Grouse Creek	170603050120	60%	8%	46%
	Jungle Creek	170603050122	70%	4%	16%
	S Fork Clearwater Face (<i>not a true prescription watershed</i>)	170603050199	***	1%	9%

3/ As noted in Forest Plan Appendix A, sediment is the primary limiting factor for these watersheds. Timber management can occur in these watersheds, concurrent with improvement efforts, as long as a positive, upward trend in habitat carrying capacity is indicated.

* For the Proposed Action, modeling was done on a peak year basis in order to meet the assumptions under which Appendix A of the Nez Perce Forest Plan was developed. It is highly unlikely, however, that all of the activities proposed would occur in a single year.

Water Quality

Streams in the project area tributary to the Salmon River currently meet their water quality criteria and standards identified in the State of Idaho Water Quality Standards and Wastewater Treatment Requirements (IDAPA 58.01.02). No streams in the project area that are tributary to

the Salmon River are listed as water quality impaired in the 2014 Idaho Department of Environmental Quality (IDEQ) 303(d)/305(b) Integrated Report (IDEQ 2017).

A reach of the Salmon River that project area streams are tributary to is listed as water quality impaired for mercury, and IDEQ will develop a Total Maximum Daily Load (TMDL) for this reach of the Salmon River to restore its water quality. No large scale mining has occurred in project area watersheds; therefore, it is unlikely that mercury is present in the project area, and the project would not contribute mercury to the Salmon River.

The S. Fork Clearwater River and project area streams tributary to it are listed as water quality impaired for temperature and sediment in the 2014 IDEQ 303(d)/305(b) Integrated Report, and a temperature and sediment TMDL has been developed and approved (IDEQ et al. 2004). PACFISH Riparian Habitat Conservation Areas (RHCAs) would be adhered to in all units except the limited proposed treatments in RHCAs to address hazard trees in campgrounds and conifer encroachment in dry meadows. These treatments would comply with the Idaho Forest Practices Act Streamside Tree Retention Rule (IDL 2014). Therefore, proposed activities would have a negligible effect on water temperature, and consequently water temperature is not a water quality concern, and is not used as an indicator of water quality.

Equivalent Clearcut Area (ECA) and Road Density

Effects to water yield are assessed using the indicator of Equivalent Clearcut Area (ECA), which represents the amount of forest canopy openings in a watershed, and is used as an indicator of water yield. All harvest units less than 34 years old and all roads are considered in the calculation. Increased water yield can lead to channel instability due to sustained increased energy in the stream channel. Actual instability is dependent on a variety of factors including stream gradient, watershed size, substrate composition, and streambank condition. ECA serves as a guide to assess the potential for decreased stream channel stability. Stream channels in the project area are described in the Aquatics Resources section as currently very stable (see Aquatics section).

There are no Federal, State of Idaho, or Forest Plan standards governing increases in water yield, however, general guidance on thresholds indicates, likely high, moderate, or low watershed condition (NOAA 1998, Gerhardt 2000, USDA Forest Service 1974). ECAs of less than 15% indicate 'High' watershed condition; 15-30% indicates 'Moderate' watershed condition; and greater than 30% indicates 'Low' watershed condition (NOAA 1998).

Existing ECAs indicate likely High watershed condition for all HUC12 watersheds in the project area (Table 13). The Proposed Action could move North and South Fork White Bird Creeks to a likely Moderate condition. Although two watersheds would change from a good to moderate condition, the percent ECAs are on the low end of values within the moderate category. No perceptible change in annual water yield would be expected by implementation of the proposed actions.

Total road density is also used, in part, as an indicator of the level of disturbance in a watershed and possible sources of chronic sediment input to streams that could affect water quality. All Forest Service system roads (open or closed), private, county, and state roads are included in the density calculation.

There are no Federal, State of Idaho, or Forest Plan standards governing road density; however, general guidance on thresholds as it relates to potential watershed condition are available (NOAA 1998). A watershed with total road density less than 1.0 mi/mi² is considered 'High' condition;

densities between 1.0 and 3.0 mi/mi² are considered a ‘Moderate’ condition; and densities greater than 3.0 mi/mi² are considered a ‘Low’ condition.

Existing total road densities indicates likely ‘Low’ watershed condition for all three HUC12 watersheds (Table 13). The Proposed Action has been designed to remove 27.5 miles of roads that are either “stacked” on hillsides or are near streams. Overall, this proposal focuses decommissioning on resource improvement opportunities, and would decrease road densities within all three HUC12 watersheds.

Table 13: Existing and Proposed Action ECA and Total Road Density for End of the World Project HUC 12 Watersheds

USGS HUC12 Watershed	Existing % ECA	Proposed Action % ECA*	Existing Road Density** (mi/mi²)	Proposed Action Road Density (mi/mi²)
N. Fork White Bird	12%	21%	4.2	4.1
S. Fork White Bird	7%	17%	3.9	3.6
Grouse Cr - S. Fork Clearwater	6%	15%	4.1	3.9

* ECA estimates are based on the assumption that all project activities would occur in 1 year. In reality, these activities would be staggered over several years.

** Road densities presented in this table differ from road densities in the “Roads” section because they are calculated at the HUC12 watershed scale, not the project area scale.

Aquatics

The existing condition for aquatics used watershed summary and fish information taken from previously conducted surveys (1982, 1992, and 2001). Cobble embeddedness sampling was conducted on the fish bearing streams in 2017 to assess existing conditions related to the Forest Plan fishery/water quality objectives. Road surveys were conducted on a large portion of the roads to assess culvert conditions and potential drainage needs as they relate to sediment delivery. Google Earth and GIS were used to assess general landscape conditions and to summarize road and stream mile information.

Watershed Summary/History

The west half of the project area encompasses the North and South Forks of White of Bird Creek and their tributaries. Talus slopes and grassland habitats are common in the west-most portions of the White Bird tributaries where slopes are steep, rocky, and dry. Meadows of various sizes are present in the headwaters of White Bird Creek. The east side of the project area includes Camp, Dump, Bully, and Grouse Creeks and several unnamed face drainages that are tributary to the mainstem South Fork Clearwater River. Slopes are steep and rocky but dominated by a dense cover of trees and shrubs as a result of moist habitat types. The headwaters of all streams in the project area are comprised of gentle slopes at higher elevations. These areas have a dense cover of trees, shrubs, and forbs. Stream channels throughout the area are very stable due to large cobble substrates and/or dense streambank vegetation.

Primary disturbances occurring in the area include timber harvest, wildfire, and grazing. Timber harvest has occurred on 53% of the project area with 22% occurring during the 1980s and only 6% occurring since then. Streamside buffers of varying widths were retained along the fish bearing streams and were also retained on some smaller streams. Riparian areas are well vegetated and aquatic habitats expected to be within natural conditions as a result. Wildfire has burned in 39% of the area with the majority (85%) occurring in the White Bird drainage. Riparian

areas are subsequently dominated by shrubs with minimal tree cover within lower North and South Forks of White Bird Creek. Riparian areas in the middle and upper reaches of these drainages are well vegetated. Riparian areas in the South Fork Clearwater River tributaries contain a dense tree and shrub cover. Grazing has occurred in the area for well over 80 years. Portions of four allotments cover the entire project area with a total of about 1,034 cow/calf pairs permitted. Ninety-nine percent of one allotment falls within the project area; therefore, about 400 pair can be expected to spend the entire season within the area, while the remaining 634 pair are rotated in and out of the project area throughout the season between allotment pastures that fall respectively at one percent, eleven percent, and twenty-six percent within the project area. Grazing effects to riparian areas and streams have been observed in the past which resulted in fencing of some of the larger meadows. Others with no fencing are still grazed with continued effects to riparian plants (utilization as forage). Minor effects to stream banks or channels from trampling were observed in isolated locations.

Aquatic Species

Aquatic species listed under the Endangered Species Act (ESA) within the project area include threatened Snake River steelhead and bull trout and spring Chinook salmon. Spring Chinook are only listed in the Salmon River and not in the Clearwater River drainage. Regional 1 sensitive species include westslope cutthroat trout, redband trout, spring Chinook salmon (Clearwater River drainage only), Pacific lamprey, and pearlshell mussels.

There are a minimum of 175 miles of stream within the project area. Of those, 50 miles of fish bearing streams are in the White Bird drainage including the North and South Forks of White Bird, Fish, Goodwin, Pinnacle, Jungle, Asbestos, and Cold Springs Creek. Rainbow trout, both the anadromous steelhead and resident inland redband forms, are found in these streams. Brook trout were found only in Cold Springs Creek but may have a wider distribution. No listed spring Chinook salmon occur in the project area; however, they do occur downstream in the mainstem of White Bird Creek. Bull trout have not been documented in the White Bird Creek drainage. Westslope cutthroat trout have not been observed but are expected to occur in some project area tributaries. No observations of Pacific lamprey or pearlshell mussel have been noted in past stream surveys.

No fish have been documented in the South Fork Clearwater tributaries (Camp, Dump, Bully, and Grouse Creeks). The 6.5 miles of the mainstem South Fork River, however, are known to have steelhead, bull trout, spring Chinook salmon, westslope cutthroat trout, lamprey, and pearlshell mussels. Please see maps ([Figure 22](#) or [Figure 23](#)) at the end of this document for fish presence information.

There are 5 road-related aquatic organism passage barriers in the project area. Three occur in Jungle Creek (White Bird drainage) and two are in the Fish Creek drainage.

Aquatic Habitats

This aquatic analysis focuses on sediment and how it relates to Forest Plan standards as well as roads within PACFISH Riparian Habitat Conservation Areas (RHCAs). Roads are considered the primary mechanism for sediment delivery to streams. There are a minimum of 8,000 acres, or 16% of the project area, included in the RHCAs and a total of 38 miles of road within them. RHCA road densities are 2.7 to 3.3 miles/sq. mile, or a low condition. Of the 38, four are paved and would not deliver sediment. The remaining 34 miles are gravel or native surfaced roads and have the potential to add sediment to streams. Nearly six miles (5.9) of road are proposed to be

decommissioned as part of the project. The table below shows how this work would affect RHCA road densities within the project area.

Table 14: RHCA Existing and Proposed Action Road Densities

USGS HUC12 Watershed	Existing RHCA Road Density (mi/mi²)	Proposed Action RHCA Road Density (mi/mi²)
N. Fork White Bird	2.7	2
S. Fork White Bird	3.0	2.5
Grouse Cr - S. Fork Clearwater	3.3	3.3

Roads were reviewed and prioritized for potential sediment delivery concerns, particularly at or near stream crossings. Ratings were based on the potential risk of delivery, failure or the need to provide organism passage. A total of 106 crossings were field reviewed. There were 9 culverts rated as high priority for replacement, 29 that were moderate, 45 that were low, and 19 that were adequate. A total of four culverts required inlet cleaning. There are about 78 crossings that have not been reviewed. A minimum of 45 locations were identified as sites where installation of cross drain culverts could occur to divert road ditch flow away from streams and reduce potential sediment delivery.

The Nez Perce Forest Plan Appendix A contains fishery/water quality objectives. Existing conditions are compared to the objectives to determine forest Plan compliance. The Forest determined that cobble embeddedness would be used to assess conditions related to the fishery quality objectives for sediment. Surveys were conducted in 2017 on the fish bearing streams within the project area. The following prescription watersheds meet their fishery quality objectives: North and South Forks of White Bird Creek, Pinnacle, Little White Bird and Fish Creeks. Cold Springs and Jungle Creek (White Bird) do not meet their fishery objectives. Asbestos Creek was all sandy substrate and does not contain cobble or gravel substrates. As such, this channel type is not appropriate for measuring embeddedness. This appears to be a natural condition as there are very few roads and minimal past harvest in the watershed. No data was collected on the non-fish bearing streams. These streams have a lower objective as a result. These streams are assumed to be meeting their objectives based on stream gradient (steep), well vegetated riparian conditions and field reviews of streams that show they are dominated by cobble substrates. These stream types do not easily retain fine sediment.

The Forest Plan Appendix A contains three prescription watersheds which would require an upward trend analysis if they do not meet their fishery/water quality objectives as mentioned in the Hydrology report above. Those streams are Pinnacle, Jungle, and Little White Bird Creeks. All three are within the South Fork White Bird drainage. Data indicates that Pinnacle and Little White Bird Creek meet their fishery/water quality objectives and therefore do not require an analysis. Jungle does not meet its fishery objective (cobble embeddedness) and will require an analysis. Although not a Forest Plan upward trend prescription watershed, Cold Springs is not meeting its fishery objective (cobble embeddedness) so an upward trend analysis will be conducted on this stream as well. Upward trend relies on both passive (PACFISH RHCAs) and active management (e.g. road decommissioning or improvement, fencing) to maintain or create an upward trend in stream conditions.

Soils

Field work was conducted in the project area during August and September 2017 to assess existing conditions related to the Nez Perce Forest Plan Soil Standards. The standards specify that management is to maintain a minimum of 80 percent of an activity area in a non-detrimental condition upon completion of the activity (USDA Forest Service 1987). Detrimental Soil Disturbance (DSD) is a standard measure used to evaluate the impact of management actions to avoid permanent impairment to soil productivity. The spatial extent of detrimental soil disturbance (DSD) was estimated for each landscape unit using the field based Forest Soils Disturbance Monitoring Protocol (FSDMP).

Past harvest information, aerial photography, and LiDAR imagery were used to classify individual treatment units within the project area into landscape units for analysis. Project treatment units were reclassified into 18 landscape units based on the proposed activity, past harvest activity, slope, aspect, and parent material.

Soils Existing Condition

Soils within the project area are derived from volcanic ash influenced loess over granite. The subsoil contains high percentages of rock fragments. The volcanic influence on these soils increases water holding capacity, organic matter content, and overall resilience to disturbance.

Past disturbance includes grazing, wildfire, and timber harvest. Timber harvest has occurred since the 1950's, totaling about 53% of the project area. Detrimental soil disturbance from past logging activities is minimal (present in two landscape units at less than 5 percent spatial extent per unit). The primary evidence of past logging activity is slight soil compaction in the upper layer (0 to 10 cm). Sufficient coarse woody debris (7 to 15 tons/acre) and organic matter (1 to 4 cm litter and duff) throughout the project units indicate consistent ecosystem function. Soils with evidence of past disturbance showed high resiliency and the disturbance is not expected to have a negative effect on productivity within the temporal boundary of analysis.

The project area includes 19,968 acres of proposed timber harvest and 7,891 acres of prescribed burning as vegetation treatments. Mitigation measures will be implemented to minimize adverse impacts to the soil resource. Proposed timber harvest and prescribed burning activities are not expected to elevate detrimental soil disturbance above the 20 percent standard. Further project development is needed to identify opportunities for restoration to decrease detrimental soil disturbance across the project area.

Threatened and Sensitive Plant Species

The forests of the project area are dominated by seral species due to past fire exclusion. Seral species such as Ponderosa pine and larch are present, but reduced from historic levels. Overall forests are dense and vegetatively simplified compared to historic conditions that were shaped by disturbance to be more diverse and complex. Grass and shrubland habitats also occur on south aspects that are generally steep and well drained. These open, non-forest habitats are frequently broken up by basalt outcrops and brows. Habitat for late seral species has generally increased, while species with an affinity for more open conditions have likely declined. In the non-forest habitats weeds have simplified the plant communities over time.

Four species of concern are known to occur in the project area, but potentially suitable habitat for several others is present. Given the extensive area of suitable habitat for some of the species of concern, it is anticipated that additional undocumented populations may occur.

Federally Listed Species

Current U.S. Fish and Wildlife Service (USFWS) direction indicates two Threatened plant species, Macfarlane's four-o'clock (*Mirabilis macfarlanei*) and Spalding's catchfly (*Silene spaldingii*) are to be addressed for projects occurring in Idaho County. Past assessments and direction provided by the USFWS indicate that habitat for these species is limited to the Salmon River basin on the Nez Perce unit of the Forest, which includes the project area. Modeling has indicated some potentially suitable habitat for both these species occurs in the project area.

The Threatened, Water howellia (*Howellia aquatilis*) does not occur in Idaho County and will not be further addressed.

Whitebark pine (*Pinus albicaulis*) is currently considered a Candidate for federal listing by the USFWS. As such it is included on the Forest's sensitive species list; however due to lack of required high elevations it does not occur in the project area and will not be further addressed.

Macfarlane's four-o'clock (*Mirabilis macfarlanei*)

Mirabilis macfarlanei is narrowly endemic to portions of the Snake, Salmon, and Imnaha river canyons in Wallowa County in northeastern Oregon, and adjacent Idaho County in Idaho. The species' global range is approximately 28.5 miles by 17.5 miles. The species is very localized in the Salmon River canyon southwest of the project area with the closest occurrence being approximately four and a half miles outside of the boundary.

Mirabilis macfarlanei occurs in river canyon habitats characterized by regionally warm and dry conditions. Precipitation occurs mostly as rain during the winter and spring. Sites are dry and open, or with scattered shrubs. Plants can be found on all aspects, but most often on southeast to western exposures. Slopes are often steep, but range to nearly flat and plants can occur on any slope position. Soils vary from sandy to rocky. Talus rock often underlies the soil substrate and several sites are relatively unstable and prone to erosion. The associated vegetation is usually in early to mid-seral condition and the grasslands are typically grazing-modified versions of bluebunch wheatgrass communities. Elevations generally range from 1,200 to 2,700 feet, but one occurrences near the forest boundary is approximately 3,200 feet. Modeling of suitable criteria indicates there are approximately 1,019 acres of potential habitat in the project area.

Spalding's catchfly (*Silene spaldingii*)

This regional endemic species is limited to northeastern Oregon, eastern Washington, and adjoining north-central Idaho, with disjunct populations in northwestern Montana and adjacent British Columbia. Several habitats are occupied within this range, including Palouse Prairie in eastern Washington and adjacent Idaho, channeled scablands in east-central Washington, canyon grasslands along the major river drainages of the Snake and Salmon Rives, the high-plateau grassland area of Wallowa Country in Oregon and the intermontane valleys of northwestern Montana and British Columbia (USFWS 2007). The closest known occurrence to the project area is approximately four air miles away.

In Idaho, *Silene spaldingii* is associated with good-condition Idaho fescue grasslands with a rich forb layer and sometimes open conifers on deep soils (Lichthardt 1997). These grasslands may occur in prairie, steppe, or canyon grassland communities on slopes ranging from 10 to 50 percent. In the relatively arid canyon grasslands, these communities exist below 4,300 feet on the cooler north and east slopes, but on the south facing slopes they occur at higher elevations.

Modeling of these characters reveals that there are approximately 231 acres of potential habitat in the project area.

Sensitive Species

Four sensitive plant species are known to occur in the project area, while suitable habitat exists for an additional seven others as indicated in Table 15, which summarizes potential habitat in the project area. Acres values are based upon modeling of potentially suitable habitat. Some models give a very close approximation of habitat present, while others are more general and may include some area that is not presently suitable due to current seral stage. Sensitive species not included in the table are not suspected to occur in the project area, nor is suitable habitat present based upon existing information or habitat modeling.

Table 15: Potential Sensitive Plants within the EOTW Project Area

Common and Latin Name	Presence	Habitat/Community Type	Potential Habitat (acres)
Least moonwort <i>Botrychium simplex</i>	Yes	Transitional habitats in grasslands and meadows. Occasionally forests.	569
Green bug-on-a-stick <i>Buxbaumia viridis</i>	Potential	Moist grand fir or cedar forests on large decayed logs and ash soils.	21,541
Broadfruit mariposa <i>Calochortus nitidus</i>	Yes	Bunchgrass grass/Ponderosa pine edges: ridges, basalt, seasonally moist soils.	1,014
Clustered lady's-slipper <i>Cypripedium fasciculatum</i>	Potential	Partial shade of warm grand fir or Douglas fir.	4,579
Giant helleborine <i>Epipactis gigantea</i>	Potential	Minerotrophic seeps and springs, especially along larger rivers and streams.	281
Puzzling halimolobos <i>Halimolobos perplexa</i> var. <i>perplexa</i>	Potential	Ponderosa pine - bunch grassland zone especially with rock outcrops.	1,864
Spacious monkeyflower <i>Mimulus ampliatus</i>	Yes	Seepy areas in open grasslands and dry ponderosa pine habitats.	2,674
Gold-backed fern <i>Pentagramma triangularis</i> var. <i>triangularis</i>	Potential	Rock outcrops and slopes within low elevation grasslands.	45
Naked Rhizomnium <i>Rhizomnium nudum</i>	Potential	Moist substrates at low to moderate elevation in cool to warm mesic forests. Often riparian.	14,463
Douglas clover <i>Trifolium douglasii</i>	Potential	Moist meadows in prairies and open forest, often over basalt.	279
Plumed clover <i>Trifolium plumosum</i> var. <i>amplifolium</i>	Yes	Dry meadows and open forest, often over basalt. Transitional habitats.	782

Heritage Resources

The data presented is a result of reviewing existing information available for the proposed project area. Documents reviewed include previously completed Heritage Resource Inventory reports (1980 through 2017), cultural resource site records, and historic forest, GLO, and Metsker's Idaho County Atlas maps.

Additional data was collected during field reviews of the proposed project treatment areas during the summer of 2017. As a result of this inventory, two (2) new cultural resource sites were documented.

The End of the World Project area has seen numerous changes in land use patterns through human involvement. Those utilizing the area included Native American inhabitants, homesteaders, miners, and more recently the American public through management by the US Forest Service. Each group interacted with the environment in their own way, extracting various products and manipulating it to their benefit when possible.

Heritage Resources Existing Condition

There are 27 known cultural resource sites within the project area. This includes eight historic sites (mining and transportation related, a monument, and buildings) and nineteen prehistoric/Native American Indian use sites.

Of these sites, ten are National Register of Historic Places (NRHP) eligible, nine are not eligible, and the remaining eight sites have not been evaluated. Only the NRHP eligible cultural sites and eight unevaluated sites are discussed. Because the historical significance is unknown at this time for the 8 unevaluated sites, they are treated as though they are NRHP eligible until determined otherwise. All eighteen sites will require mitigation and/or protection to avoid project related impacts. These are included in the design features of the project. No mitigation is required for the nine non-eligible sites. Eight sites are located in treatment units currently proposed for prescribed burning, fourteen sites are located in proposed timber harvest units, and one site is located in a proposed campground/meadow restoration unit. Four sites are located within treatment units with multiple proposed activities including prescribed burning and timber harvest.

Forest Plan Consistency

The proposed action complies with the Nez Perce National Forest Land and Resource Management Plan relevant to Cultural Resources. The 1987 Forest Plan with the 1990 amendments, documents goals, standards, and management directions for Cultural Resources within the forest boundary. The following cultural related forest-wide management direction or standards, from those listed on page II-17 of the Nez Perce National Forest Plan, apply to this project and will be met as follows.

Table 16: Forest Plan Standards for Cultural Resources

Standard Number	Standard Summary	Compliance Achieved By...
1	Survey areas of potential land disturbance...	Sample surveys have been completed and has been/will be reported to SHPO with a preliminary <i>No Adverse Effect</i> determination.
2	Evaluate and protect sites and districts...	Nine (10) NRHP eligible and 8 NRHP unevaluated cultural sites are known to occur within the project area, avoid site locations.
3	Protect and preserve Native American religious and cultural sites...	No Native American religious sites are known and none were identified during the consultation process with the Nez Perce Tribe.
4	Protect and preserve National Register eligible historic properties...	Ten (10) eligible sites and 8 NRHP unevaluated sites are present within the proposed project area, avoid site locations.

Standard Number	Standard Summary	Compliance Achieved By...
5 (as amended, 1990)	Consultation with the Nez Perce Tribe to protect cultural sites...	Consultation with the Nez Perce Tribe is ongoing. This project was most recently presented to the Tribe on October 18, 2017.

Also, in ceding lands to the United States, the Nez Perce Tribe reserved, in part, the exclusive right of taking fish at all usual and accustomed places...with the privilege of hunting, gathering roots and berries, and to gather traditionally used plants on lands now administered by the Nez Perce National Forest (Article 3, Treaty with the Nez Percés, 1855). As a result, the Forest, as an agency of the United States, has a trust responsibility to insure the availability and accessibility of those resources to the tribe.

The recommendations provided in this section regarding the preservation and protection of significant cultural resources, consultation with the Nez Perce Tribe, and consultation with the SHPO are consistent with the Nez Perce National Forest Plan as amended.

Wildlife

Wildlife Existing Conditions

Federally Listed Threatened or Endangered Species or Designated Critical Habitat

Canada Lynx

This portion of the Nez Perce-Clearwater National Forests is considered un-occupied secondary lynx habitat and does not contain any designated lynx critical habitat. Lynx prefer mature forests for denning, with down logs and wind throw Subalpine fir and Engelmann spruce and early seral stages for foraging, especially dense young stands of lodgepole pine. (Snowshoe hare, the lynx's primary prey, appear to be common). The project area falls within Lynx Analysis Unit 2090502 and there is modeled lynx habitat, primarily within the southern 1/2 of the Project Area although on-going field surveys indicate that the on-the-ground forest structure and species composition are not representative of preferred lynx habitat. There have been two documented sightings within the project area near Goodwin Meadow (2002) and Schwartz Meadow (2001) along the Grangeville Salmon Road. Replicate snow track surveys conducted on the Nez Perce NF portion of the Forest 2007, 2010, and 2014 have failed to document use by Canada lynx and there has been no record of breeding on the Forest.

All treatments within field verified lynx habitat would need to conform to Northern Rockies Lynx Management Direction (NRLMD) for lynx habitat management. Approximately 3.6% of the modeled lynx habitat in LAU 2090502 is in an early stand initiation condition. NRLMD standards require that no more than 30% of lynx habitat within an LAU be in an early stand initiation condition. Existing conditions are well below that standard. The NRLMD also requires that no more than 15% of lynx habitat within an LAU be subject to regeneration harvest within a 10-year period. Since 2007 there has been approximately 383 acres of regeneration harvest within LAU 2090502. This harvest falls within modeled lynx habitat and represents 1.9% of the modeled lynx habitat within the LAU, again well below the standards defined in the NRLMD.

Grizzly Bear

Grizzly bear are not listed as a threatened species for the Nez Perce-Clearwater NF and will not be discussed further.

Species Proposed for Federal Listing or Proposed Critical Habitat

North American Wolverine

Wolverines are dependent on deep, persistent snowpack at higher elevations for breeding and use a variety of habitats during the course of the year. There have been four observations of wolverine in the project area, all of them incidental, with the most recent from 2000. However, there is no wolverine habitat (Inman primary habitat model) within the project area and it is likely that any use of the project area by wolverines would be transient in nature. Deep, persistent snow suitable for wolverine denning does not occur in the End of the World project area. Project activities would not affect the suitability of the area as a travel corridor or dispersal zone.

Forest Sensitive Species

American peregrine falcon, bald eagle, black swift, common loon, harlequin duck, long-billed curlew, Coeur d'Alene salamander

No suitable habitat in the project area. These species will not be discussed further.

Black-backed Woodpecker

Black-backed woodpeckers are known to occur in the project area, likely at low densities as there is little recent fire-killed timber in the project area. The nearest recent (2010-2017) fire would be the 2012 Sheep which burned to within approximately 3.5 miles south of the project area. Three small fires (Dump, Fish Creek, and White Bird Creek) burned in 2015 however all of the fires were kept to one tenth of an acre or less.

Flammulated Owl

Flammulated owls are cavity-dependent owls that inhabit mostly mature to old ponderosa pine and ponderosa pine/Douglas-fir stands with low to medium stem densities. These small owls use large-diameter trees (generally 18 inches diameter at breast height or more), especially for nesting habitat, and prefer open stands with understory grass species for hunting moths and other insects. Areas of dense understory conifer thickets are important for roosting, thermal, and escape cover. Approximately 1,788 acres of modelled flammulated owl habitat scattered throughout the Project Area and there have been previous surveys with positive detections in the South Fork of White Bird Creek Subwatershed along the southern boundary of the project.

Mountain Quail

Mountain quail habitat is characterized by short distances to water and escape cover and tall, dense shrubs. There is suitable habitat and the Intermountain Bird Observatory (IBO) surveyed three grids (nine survey points each) sites within the project area for mountain quail in 2016 with no observations. The IBO surveyed an additional, separate, four grids (again, nine survey points each) in 2017 with positive observations of mountain quail recorded in lower South Fork of White Bird Creek.

Pygmy Nuthatch

Pygmy nuthatch exhibit a strong and almost exclusive preference for ponderosa pine habitat, especially older, open (<70% canopy coverage) habitats. Requires high snag densities. Forages on pine seeds and insects extracted from tree bark. Though there have been no observations within the project area there are approximately 1,756 acres of modelled pygmy nuthatch habitat.

White-headed Woodpecker

White-headed woodpeckers primarily occupy low-elevation, multi-storied open stands of mature and large, later seral ponderosa pine with canopies of 50-70%. There is approximately 778 acres of modelled white-headed woodpecker habitat within the Project Area. Intermountain Bird Observatory surveyed five grids (9 survey points each) within or adjacent to the project area white-headed woodpeckers in 2016 and an additional 6 grids in 2017 with no observations recorded either year.

Bighorn Sheep

There is approximately 116 acres of modelled bighorn sheep summer habitat within the project area though Idaho Fish and Game does not include the area within their designation of bighorn sheep distribution. Most of this modeled habitat is to the west, within areas of proposed fuels treatments; although there is also modeled habitat to the northeast within the South Fork of the Clearwater but outside of the project area. There are no sheep grazing allotments within the project area.

Fisher

In summer fisher prefer Spruce/Douglas fir mature to old growth forests; complex habitat structure. Winter habitat is typically decadent lodgepole pine and Douglas-fir with snags, trees 8-14 inches DBH; also mature and old growth forests. Potential habitat can be analyzed using a combination of the Sauder (2014) model and existing vegetation data modeled by the Region 1 existing vegetation mapping program (R1-VMap) (Barber et al. 2011). The Sauder model is considered the best available science for a landscape scale analysis of fisher habitat in Region 1 but is better applied at a subwatershed level or larger that approximates the home range of a female fisher (6th level Hydrological Unit Code; J. Sauder, pers. comm.). For this reason, stand-scale vegetation characteristics were selected within the area considered as “probable habitat” by the Sauder (2014) model. The GIS query within probable habitat was based on R1-VMap. Stands classified as having a mature, mesic-mixed conifer forest (determined by the species with the greatest abundance of canopy cover, basal area, or trees per acre) were selected and intersected with “probable habitat” by the Sauder (2014) model. Section criteria for mature forests are those areas greater than 15” DBH. Open areas are those areas with <=10% canopy cover, which includes grass/forb, shrub, sparse vegetation, urban, transitional forest, as well as recent (within 15 years) high intensity fires, and regeneration harvest. Based on modelling there are approximately 41,048 acres of potential fisher habitat within the project area. Considering the average home range of a female fisher is approximately 12,000 acres this equates to potential habitat for approximately 3.4 female fisher.

Table 17: End of the World Project - Probable Fisher Habitat

HUC12*	HUC 12 Ac	Probable Habitat Acres (Sauder 2014)	Mature Habitat Ac (VMap)	% of Probable Habitat	Open Habitat Ac. (VMap)	% of Probable Habitat	"Other" Habitat Ac. (VMap)	% of Probable Habitat
N. Fork White Bird Creek	21,070	11,983	7,534	63%	776	6.5%	3,674	30.7%
S. Fork White Bird Creek	22,964	17,675	9,182	52%	1,237	7.0%	7,257	41.1%
Grouse Creek-S. Fork Clearwater River	26,913	11,389	9,357	82%	751	6.6%	1,281	11.2%
TOTALS	70,947	41,048	26,073	64%	2,764	6.7%	12,211	29.7%

* This table uses full USGS HUC12 as the analysis area.

Based on the combined watersheds, approximately 64% of the modelled probable habitat is in a mature forest structure and 7% is considered open. Based on Sauder's 2014 research, current conditions meet the forest pattern that fisher tend to occupy related to mature forest ($\geq 50\%$ mature forest arranged in connected, complex shapes) but exceeds percentage of open areas ($\leq 5\%$ of the landscape) considered optimal for fisher (Sauder pers. Comm. 2015). The majority of these open areas are naturally occurring meadows.

There have been few observations of fisher within the project area. Those that have been documented are in the southeastern portion of the project area in the upper portions of the South Fork of White Bird Creek subwatershed.

Fringed Myotis

Prefers dry coniferous forests 4,000-8,000 feet elevation. Roosts are in caves, buildings, bridges, crevices and other large cavities and foraging fringed myotis are often associated with riparian areas. There is suitable fringed myotis habitat within the project area, particularly in the dryer breaklands to the southwest and northeast.

Gray Wolf

There are no known den or rendezvous sites known in the project area. Wolves use the area for hunting and for travel and conditions are suitable to support a pack. Wolf prey populations (elk and deer) are generally strong on the project area.

Long-eared Myotis

Long-eared myotis roost under exfoliating tree bark, and in hollow trees, caves, mines, cliff crevices, sinkholes, and rocky outcrops on the ground. They also sometimes roost in buildings and under bridges. There is suitable habitat and previous (2006) surveys documented presence long-eared myotis in the project area.

Long-legged Myotis

Prefer large snags for roosting, but will also roost in live trees. Habitat is often relatively continuous tracts of late-successional forest. There is some evidence to suggest that long-legged myotis select snag and, to a lesser degree, green tree roost sites with riparian management buffers. There is suitable habitat and previous (2006) surveys documented presence long-legged myotis in the project area.

Townsend's Big-Eared Bat

Preferred hibernation and roosting sites are caves, cave-like rock formations, mine adits, and in some cases bridges, buildings, and concrete culverts. Large trees with fire scars, loose bark, or basal cavities are also used for roosting sites. There is no identified high quality cave-like habitat known within the project area. There are potentially suitable rock features in the South Fork White Bird Creek subwatershed.

Ring-neck Snake

Ring-neck snakes prefer moist coniferous forests with brushy understories, open grasslands, rocky hillsides and early-seral riparian areas. Prey species include earthworms, slugs, other small invertebrates, small salamanders, frogs, lizards, and snakes. There is suitable habitat for ring-neck snakes within the project area, mostly to the southeast within the South Fork of White Bird subwatershed where there are rocky open hillsides incised with seasonally wet drainages.

Western Toad (Boreal)

Western toads are largely terrestrial and, outside of breeding season, may wander considerable distances from their aquatic breeding sites (palustrine aquatic and palustrine emergent wetlands) utilizing rodent burrows, logs, etc. as refugia during the day to conserve body water. There are approximately 450 acres of mapped palustrine aquatic and palustrine emergent wetlands within the project area which would provide breeding habitat for western toads however, because toads occupy such a large range of terrestrial habitats outside of the breeding season, they may be found almost anywhere within the project area except the most open, driest habitats.

Management Indicator Species

Northern Goshawk

Northern goshawks nest in forests with large diameter trees, open understories, and high canopy cover (typically mature to old-growth forests). Foraging habitat used by goshawks has more variable tree-sizes but still has relatively open understories. Goshawks also forage along forest edges. The goshawk is rated secure across its range (global rank G5) and is not listed as a state species of greatest concern. There is approximately 10,783 acres of modelled goshawk nesting habitat within the project area and 15,572 acres of modelled goshawk foraging habitat within the project area. There are at least three locations within the project area where surveys have indicated breeding (i.e. territorial behavior) or nests have been located. The most recent surveys of historic nests conducted in 2016 by IBO indicated one of these locations as being occupied and breeding success was indicated at another (presence of a hatch year bird). These three territories were again surveyed in 2017 however survey results are not in yet.

Pileated Woodpecker

Pileated woodpeckers nest in large diameter trees in areas with high canopy closure, decadence, and multi-layered structure. They will forage in habitats with small to large trees by utilizing snags, stumps, trees, and logs with abundant insect (i.e. carpenter ants) populations. The pileated

woodpecker is rated secure across its range (global rank G5) and apparently secure (state rank S4) in the state of Idaho. There is approximately 698 acres of modelled pileated nesting habitat within the PA and 15,200 acres of modelled pileated foraging habitat within the PA.

American Marten

American marten prefer higher elevation sites in subalpine fir/Engelmann spruce forests and mixed subalpine fir/lodgepole pine forests. Suitable habitat has large woody debris and high canopy closure. There is approximately 9,033 acres of modelled marten habitat within the PA.

Bighorn Sheep

See Sensitive Species above.

Elk

There are eight elk analysis areas which fall at least partially within the project area. All Elk Analysis Areas (EAAs) have a Forest Plan Objective of 25% Elk Habitat Effectiveness (EHE). Idaho Fish and Game Nutritional Capacity model indicates a low summer nutritional potential across the project area with the exception of more moderate potential in the southwestern portion of the project area. Forest Plan objectives for Elk Habitat Effectiveness within the EAAs affected by the Project are 25% each for Bully Creek, Camp Creek, Cold Springs, Fish Creek, Goodwin Meadows, Goose Creek, Grouse Creek, and Pinnacle Ridge EAAs. Analysis conducted as part of the Designated Routes and Areas for Motorized Vehicle Use (DRAMVU) indicates that all EAAs are currently exceeding EHE objectives (29%, 37%, 33%, 26%, 30%, 40%, 36%, and 46% respectively). Only Fish Creek EAA is close to not meeting EHE objectives due partly to the motorized trail network around the Fish Creek Campground.

Fisher

See Sensitive Species above.

Grizzly Bear

Habitat is considered unoccupied.

Shiras Moose

Shiras moose utilize even-aged pole timber stands and open areas, including clear-cuts and lakes, were used most by moose during summer. Old-growth grand fir/Pacific yew stands were critical moose winter habitat. During deep snow periods, moose prefer habitat characterized by dense cover and abundant forage. There is Moose Management Area (MA-21) primarily along the eastern edge of project area in the Grouse Creek -South Fork of the Clearwater River subwatershed. FS Veg Polys also indicate Pacific yew to the southwest in the South Fork of White Bird Creek subwatershed. Forest Plan Standards for MA-21 are to manage these communities under appropriate silvicultural prescriptions while also controlling road access in the fall and winter to reduce harassment and poaching. These same standards would also be applied to stands with harboring Pacific yew but which are not designated as MA-21.

Scenery and Eligible Wild and Scenic Rivers

Scenery Existing Condition

The project area is located approximately six (6) miles south of the community of Grangeville, Idaho. Its analysis area is part of the Salmon River Mountain range with large rivers, steep

canyon walls and rolling uplands. Tributaries of the Salmon River form the western boundary of the project. The Salmon River is one of the largest rivers in Idaho and is a popular destination for visitors pursuing a number of recreation opportunities.



Figure 4: View looking west toward the Salmon River Breaklands from the ridgeline above the river. (D. Jones)

The Salmon River canyon breaklands, as seen in the photo above, are relatively dry and have a mix of grassland and dry coniferous vegetation. The South Fork of the Clearwater canyon, which bounds the project to the east, has a river course with larger rock features and fairly rapid flowing water. It has steeper canyon walls with a mix of coniferous and deciduous vegetation, with areas of open grassy slopes and rock outcrops. The South Fork of the Clearwater is an eligible wild and scenic river, with scenery listed as one of the potential outstandingly remarkable resources to be protected for the river. The central portion of the analysis area is composed of mixed coniferous vegetation across broad expanses of rolling uplands. This pattern is commonly found in the upland areas surrounding the Salmon River and have few distinctive areas of vegetation or landform.



Figure 5: The South Fork of the Clearwater River flows through a narrow, steep canyon. At the top of the ridge above the river, the landscape transitions to rolling uplands. This view from John's Creek Trailhead also shows the extent of rock outcrops and other openings in the canyon. (D. Jones)

Recreation use in the project area includes developed and dispersed camping, extensive winter and summer trail use, berry-picking, dispersed camping, equestrian use, hunting, fishing, and driving for pleasure. The use of various winter trails in the area is especially popular. Many visitors pass through the area on their way to visit the Gospel Hump Wilderness Area and Salmon River canyon both of which are to the south of the project area.

The project area forms the scenic backdrop of the visitor's recreational activities. The scenic quality from the roads, trails and eligible Wild and Scenic River in the area is of concern to some visitors. State Highway 14, which is adjacent the eastern border of the area of interest is considered a travel corridor with a high concern for scenic quality. The Grangeville Salmon Road (#221) is used moderately for recreation purposes and has a moderate concern for scenic quality. The Cover Placers Road (#279), Twin Cabins Road (#642) and the Free Use Road (#243) are also access routes that are popular for recreation visitor use. Trail 480 is an extensive series of loop trails designed for winter and summer use. It is found adjacent to the Fish Creek Campground and Trailhead and accessed by the Grangeville Salmon Road (#221). Other roads and trails in the area have some use, but are not considered sensitive travel corridors.



Figure 6: Fish Creek Campground and Trailhead is located in the northern portion of the analysis area and is popular as an all season destination. (Photo credit: D. Jones)

There is evidence of extensive past harvest activities within the area of interest, including a number of openings that have been created within the last fifteen years. There are also areas in the central portion of the analysis area where previous harvest created openings, but those have now filled in with vegetation. Some areas are still visible but have re-vegetated to the point that they often don't appear as distinctive openings.



Figure 7: Past harvest area from the 1980s. These areas no longer have the appearance of an opening. (Photo credit: D. Jones)

While some openings are still evident, they do not tend to dominate the existing landscape character in the project area. These openings meet the Forest Plan Visual Quality Objective

(VQO) for the area of Retention, Partial Retention, Modification and Maximum Modification. These openings are in various stages of regeneration. Most take at least 10 to 15 years to appear as only natural timber stands without man-made openings.

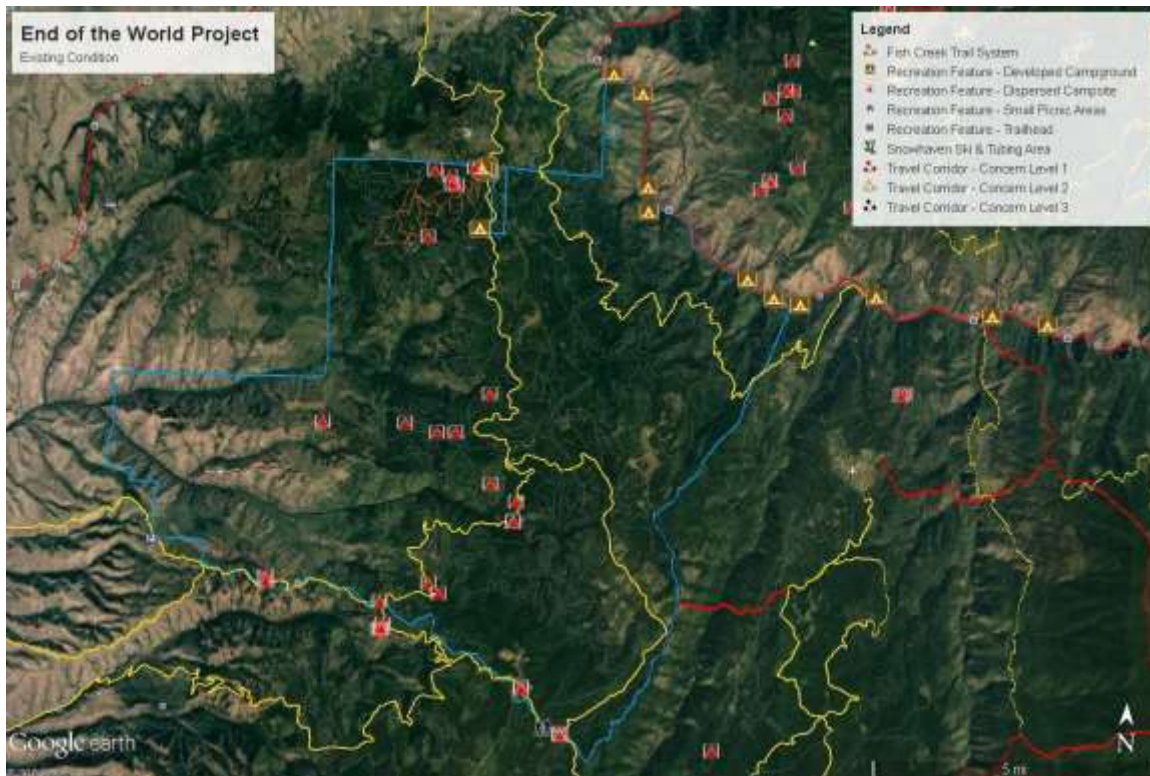


Figure 8: This Google Earth image shows past harvest activities, existing travel corridors, recreation sites, and landscape features.

Private Lands

There are private lands within the boundary of the project area. Some of these lands have been harvested in the past and many appear as managed openings.

Eligible Wild and Scenic Rivers Existing Condition

The South Fork of the Clearwater River is an eligible Wild and Scenic River (WSR) identified in the Nez Perce National Forest Plan. Approximately seven miles of the river make up the eastern edge of the project area. Fisheries, geologic resources, recreation and scenery are considered Outstanding and Remarkable Values for this eligible river. These resources will be analyzed and the project will be designed to protect and enhance these features.

Eligible WSRs do not have a unique management area designation in the Nez Perce Forest Plan. Management direction for potentially eligible streams is contained in Forest-wide Management Direction (USDA Forest Service 1987b, pg. II 22-23) as amended by Forest Plan Amendment No.1 and states that timber harvest can be allowed; however, the existing character and visual condition of the immediate river corridor shall be maintained. Forest Service Handbook (FSH 1909.12, Chapter 80, Section 82.5) also provides management direction, stating that a range of vegetation management practices are allowed, if these practices are designed to protect users, or protect, restore, or enhance the river environment, including the long-term scenic character.

Design Features and Mitigation Measures

Design Features

Design features describe the blueprint for project development and are an integral component of the proposed action. Design features are generally identified early in the NEPA process as part of developing the proposed action and act as the sideboards for the activities being proposed when moving into and through the effects analysis. Design features are typically derived from Forest Plan Standards and Guidelines, and Forest Service Manual and Handbook policy and direction. Additionally, design criteria often include mandatory contract provision requirements, Best Management Practices (BMPs), Idaho State Water Quality Standards, Idaho Forest Practices Act Rules, and similar laws, rules or policy. Generally, design features reiterate the things we are required to do to ensure our decision document is supported by an environmental analysis that is consistent with the Forest Plan and applicable laws and regulations. For the End of the World Project, some (this is not an exhaustive list) of the design features include:

- No activities are proposed within old growth (MA20).
- Moose Winter Range (MA21): No treatments will take place in designated MA21. Although not required, prescriptions conserving Pacific Yew will be applied to stands harboring Pacific yew but which are not designated as MA21.
- Silvicultural prescriptions would be designed to promote within-stand resilience (as described in the purpose and need), create a variety of patch sizes on the landscape, and provide species diversification.
- Regeneration harvest, intermediate harvest, and pre-commercial thinning would be utilized.
- Regeneration harvest units would be replanted at varying stocking levels depending on biophysical setting and silvicultural prescription.
- Replanted units would be surveyed to certify they are stocked within five years.
- Coarse woody debris and snags would be retained where safe to do so.
- Prescribed fire would be used after harvest, where feasible, to reduce activity fuels and provide site preparation for replanting.
- Harvest units will be located to achieve the desired combination of multiple-use objectives. The units cut will be shaped and blended with the natural terrain, to the extent practicable, to achieve visual (aesthetic), wildlife habitat, or other objectives.
- Treatments have been designed to protect and enhance the South Fork Clearwater River (eligible Wild and Scenic River).
- PACFISH Riparian Habitat Conservation Areas (RHCAs) would be adhered to in all units except the limited proposed treatments in RHCAs to address hazard trees in campgrounds and conifer encroachment in dry meadows.
- Dry meadow/range maintenance will consist of hand falling trees within the designated areas. Trees will generally be left on site.
- Prescribed fire will be evaluated as needed during the seasonal grazing plan development to determine if grazing restrictions are appropriate.

- Known historic (NRHP Eligible/historically significant) properties or sites will be avoided or protected during project implementation.
- Ground-disturbing activities would be halted if cultural resources are discovered until an Archaeologist can properly evaluate and document the resources in compliance with 36 CFR 800 (mandatory contract provision B6.24).

Mitigation Measures

Mitigation is defined by CEQ in 40 CFR 1508.20. Mitigation measures are those actions we take to avoid, minimize, rectify, reduce, eliminate, or compensate for environmental impacts caused by our projects. Mitigation includes:

- Avoiding the impact altogether by not taking a certain action or parts of an action.
- Minimizing impacts by limiting the degree or magnitude of the action and its implementation.
- Rectifying the impact by repairing, rehabilitating, or restoring the affected environment.
- Reducing or eliminating the impact over time by preservation and maintenance operations during the life of the action.
- Compensating for the impact by replacing or providing substitute resources or environments.

Mitigation measures address site-specific factors about the project that need protection over and above those already built into the design. For the End of the World Project, some of the mitigation measures that have been identified by the ID Team include:

Table 18: End of the World Mitigation Measures

End of the World Project Proposed Mitigation Measures	
Soil Resources	
SR-1	Restrict activities when soils are wet to prevent resource damage (indicators include excessive rutting, soil displacement, and erosion).
SR-2	Limit ground based skidding to slopes 45% or less (Idaho Forest Practices Act).
SR-3	Locate and design skid trails, landings and yarding corridors prior to activities to minimize the area of detrimental soil effects. Space tractor skid trails no less than 80 feet apart (edge to edge), except where converging on landings. This does not preclude the use of feller bunchers.
SR-4	In units harvested with ground based equipment, pile slash in up to 50% of the unit area.
SR-5	Ensure suspension of one end of the log when utilizing skyline yarding systems.
SR-6	Construct drainage controls (waterbars, drain ditches) and apply available slash in log yarding corridors (cable or skyline) upon completion of harvest activities where bare mineral soil is exposed and water flow may be confined.
SR-7	Scarify and recontour excavated skid trails to restore slope hydrology and soil productivity.
SR-8	Scarify non-excavated skid trails and landings that are compacted or entrenched 3 inches or more. Scarify to a depth of 6 to 14 inches.
SR-9	All temporary roads will be scarified and recontoured (decommissioned). Reshape cut/fill slopes and crossings to natural contours. Apply available slash to the re-contour surface (slash is considered available where the equipment is able to reach it from the working area where the decommissioning is occurring).
SR-10	Retain and/or return green tops within units and allow green foliage to over-winter 1 year prior to burning in units 1A, 3, 4, 5, 6, 7, 9, 10, 11, 41, 59, 62, 63.

End of the World Project Proposed Mitigation Measures	
SR-12	Allow winter logging only during frozen conditions. Frozen conditions are defined as 4 inches of frozen ground or a barrier of unpacked snow greater than two feet in depth and packed snow one foot in depth.
SR-13	Keep slash piles (excavator piles) small (4-10' in height).
SR-14	Retain an average of 7 to 15 tons per acre of coarse woody debris (greater than 3 inches in diameter) following completion of activities.
Water Quality and fish habitat	
WQ-2	Avoid direct ignition of fuels within RHCA's. Allow prescribed fires to back into these areas.
Access Management & public safety	
AM-1	Close existing gates (consistent with current motor vehicle restrictions) daily during non-operating hours.
AM-2	Consider alternative snowmobile routes and/or access and parking when winter log haul occurs on roads normally used as groomed snowmobile routes. Coordinate with the contractors and local organization(s) responsible for trail grooming to minimize impacts on forest visitors. *Project mitigation measures will identify specific routes, access and parking areas.
Wildlife	
WL-1	Spring burning shall occur in units F4 and F16 to address any concerns regarding wildlife species or habitat, including migratory birds, ungulate calving/fawning, and threatened endangered and sensitive species. Coordinate implementation of spring prescribed burn operations in units with a wildlife biologist.
WL-2	Retain trees with obvious cavities or large stick nests.
WL-4	Prohibit logging activities within units 40, 41, 74A, 74B, 75, 76, 77, 79, 81, 82, 83, 134, and 143 from May 15 through June 15 to avoid impacts on ungulate calving/fawning.
WL-6	Maintain a minimum 40 acre yearlong no-treatment buffer (no ground disturbing activities) around recently occupied goshawk nest trees in units 1A, 25, and 12A.
WL-7	No ground disturbing activities shall be allowed inside known occupied post-fledgling areas from April 15 to August 15.
Air Quality	
AQ-1	Limit burning to times when wind patterns would cause smoke plumes to drift away from local populated areas.
AQ-2	Coordinate with the North Idaho/Montana Airshed Group when prescribed burns are scheduled (minimum 24 hour notice) to ensure compliance with the Clean Air Act.
Fisheries	
FF-1	Allow instream activities in fish bearing streams between July 1 and August 15 to avoid sediment deposition on emerging steelhead or Chinook redds. These dates may be site-specifically adjusted through coordination with Central Idaho Level 1 team review and approval.
Recreation	
REC-1	Protect system trails 2009A, 2026, 325, 327, 340, 386, 480, along with 480A-G, and 641 by requiring the following measures within 6 feet of centerline of the trail(s): directional felling, cutting stumps to 8 inches or less, no slash piles, and no slashing of the small diameter trees.

End of the World Project Proposed Mitigation Measures	
Noxious Weeds	
NW-1	Use Forest Service approved native plant species or non-native annual species to meet erosion control needs and other management objectives. Follow regional plant and seed transfer guidelines. Require contractors to use certified seed laboratories to test seed against the all state noxious weed list, and provide documentation of the seed inspection test to the contract administrator. Apply only certified weed-free seed and mulch.
NW-2	Visually inspect that rock used for surfacing is free of noxious weed seed.
NW-3	Remove all mud, soil, and plant parts from off road equipment before moving into project area to limit the spread of noxious weeds. Conduct cleaning off National Forest lands.

Maps

Maps depicting the proposed actions and the existing conditions are found on the following pages. Larger (11X17) maps can be found on the project website located here: [End of the World Project Website](#)

The maps are as follows:

Proposed Actions: [Figure 9](#)

Proposed Logging Systems: [Figure 10](#)

Wildland Urban Interface (WUI): [Figure 11](#)

National Insect and Disease Risk Prediction Map (Years 2013-2027): [Figure 12](#)

Project Area Roads and Proposed Roadwork: [Figure 13](#)

Proposed Watershed and Aquatic Improvement: [Figure 14](#)

Past Harvest: [Figure 15](#)

Current Insect and Disease Survey Map: [Figure 16](#)

Current Vegetation Structure and Size: [Figure 17](#)

Past Fire Occurrence: [Figure 18](#)

Current Invasive Plant Species Survey Map: [Figure 19](#)

Invasive Plant Species Expansion Probability Map: [Figure 20](#)

Current Range Allotment and Range Improvements: [Figure 21](#)

HUC12 Watersheds and Fish Presence: [Figure 22](#)

Forest Plan Prescription Watersheds and Fish Presence: [Figure 23](#)

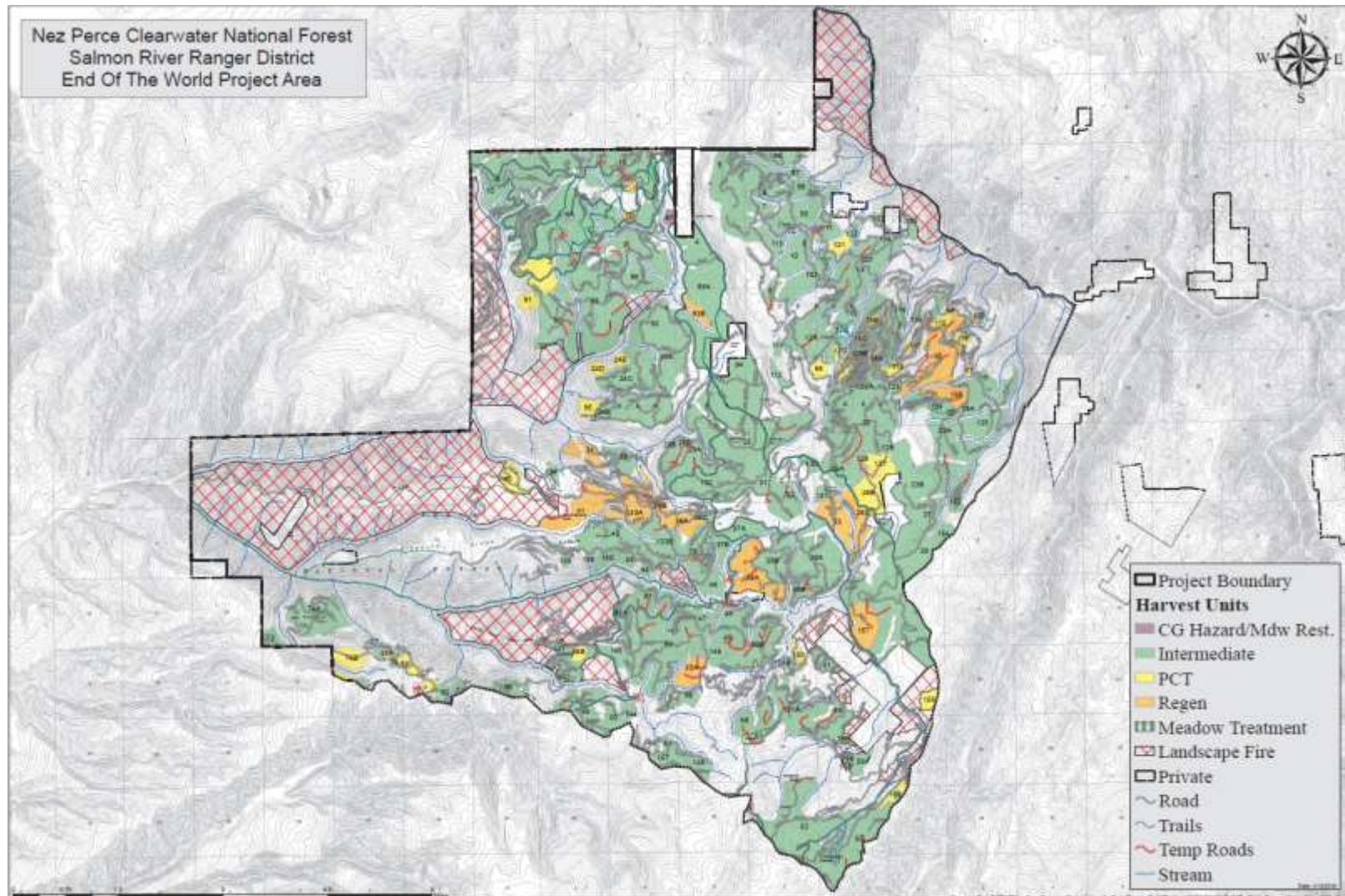


Figure 9: End of the World Project - Proposed Actions

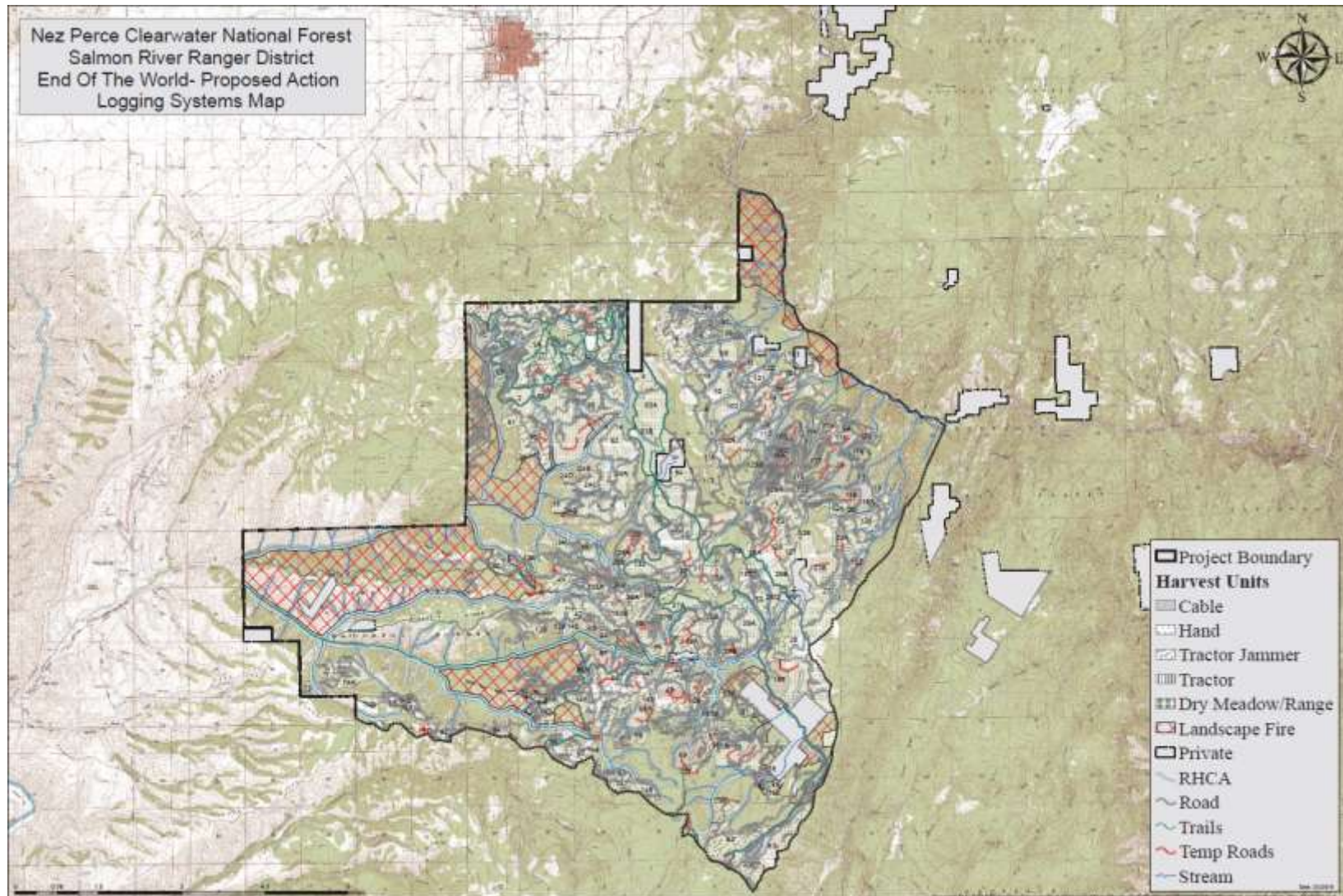


Figure 10: End of the World – Proposed Logging Systems Map

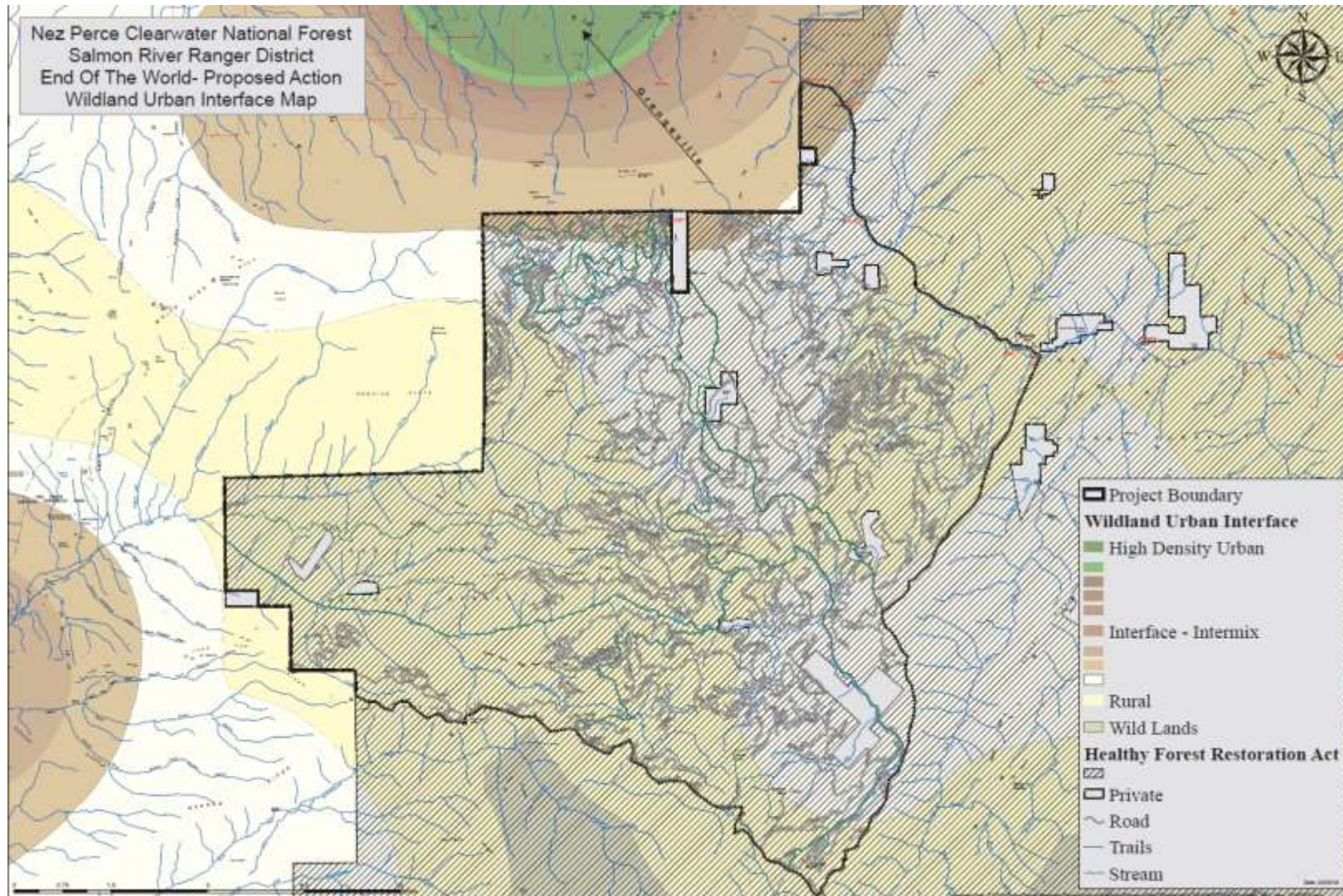


Figure 11: End of the World Project – WUI Map

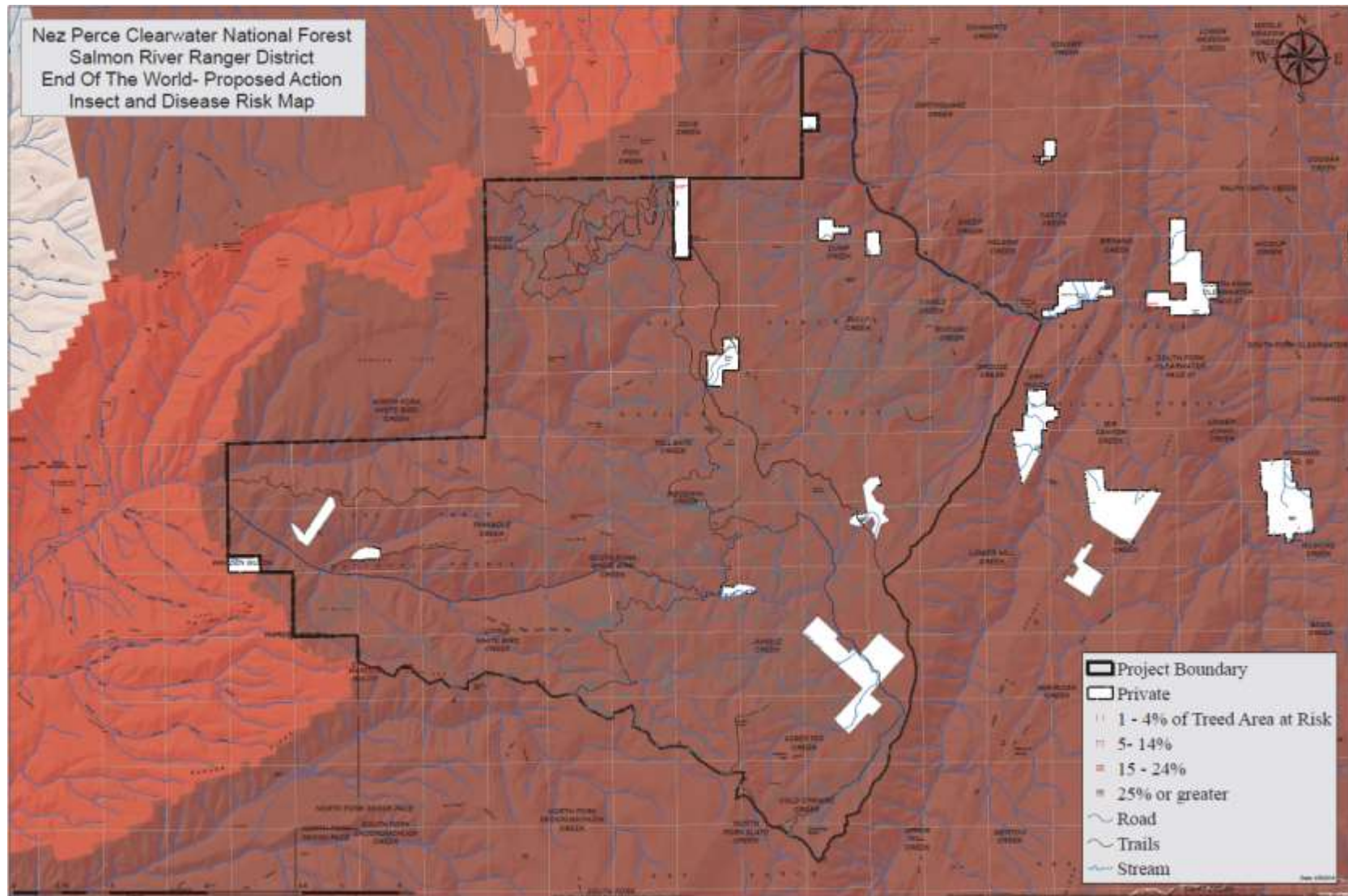


Figure 12: End of the World Project – National Insect and Disease Risk Prediction Map (Years 2013-2027)

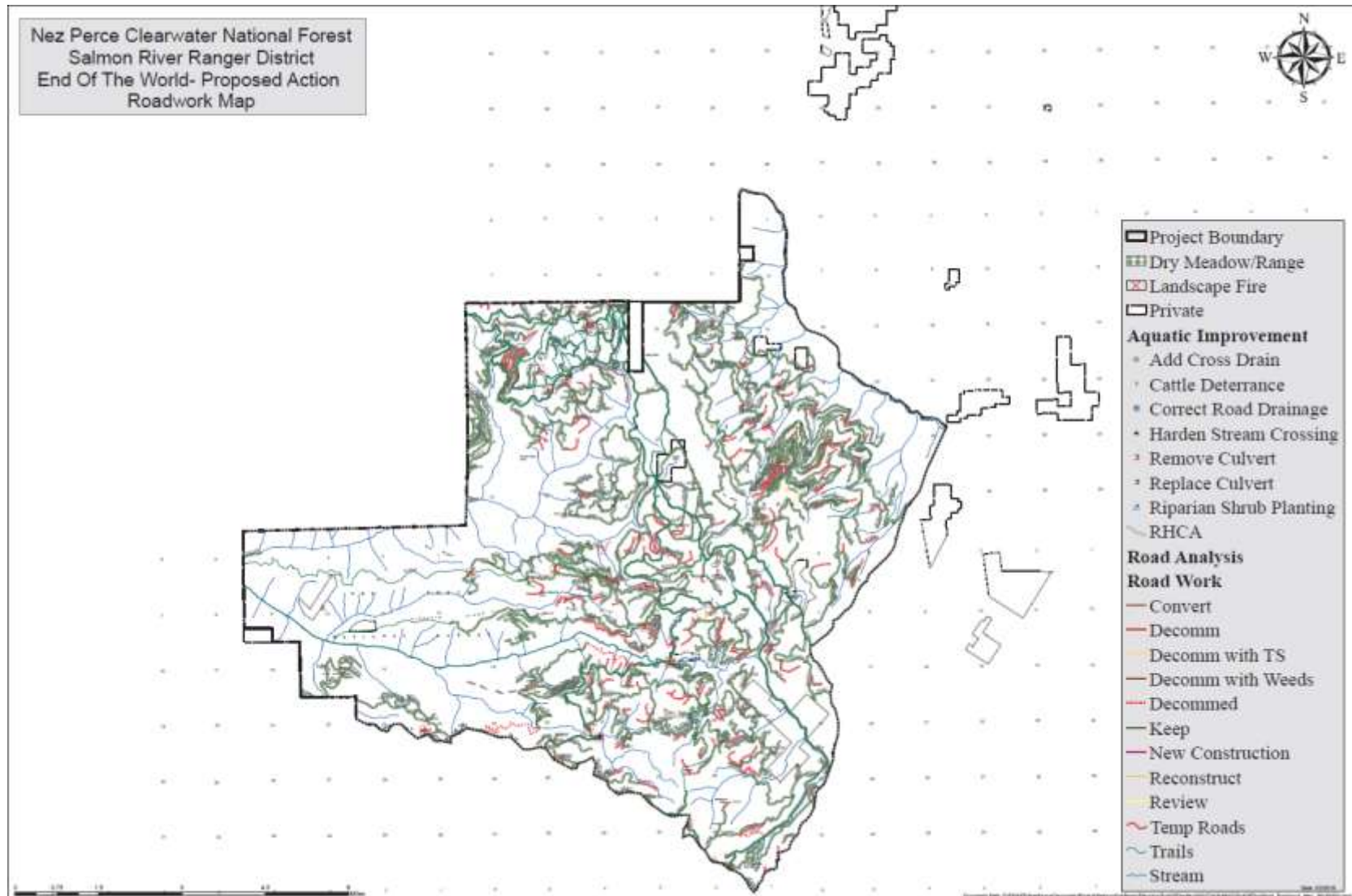


Figure 13: End of the World Project – Proposed Roadwork

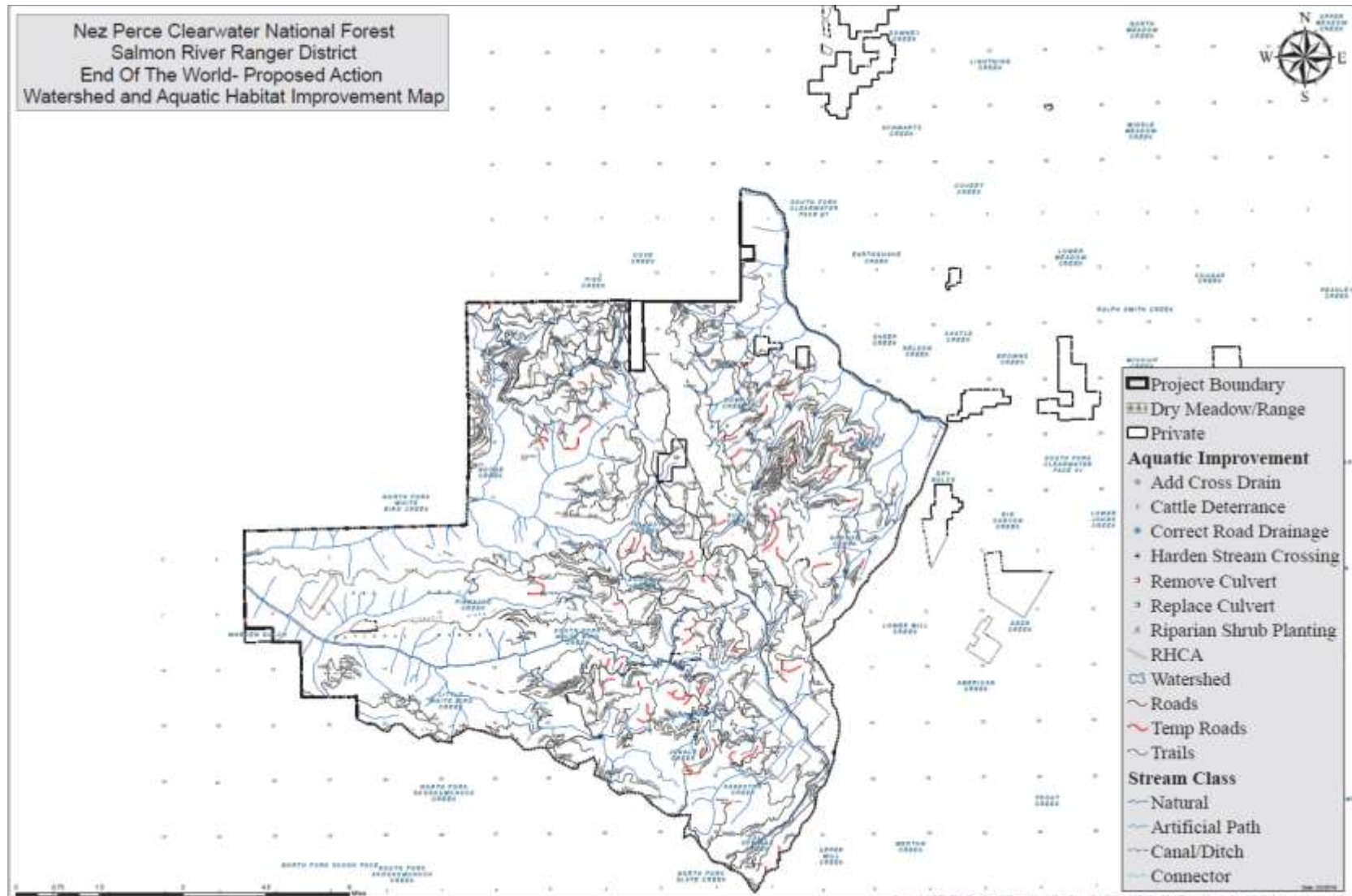


Figure 14: End of the World Project – Proposed Watershed and Aquatic Habitat Improvement Map

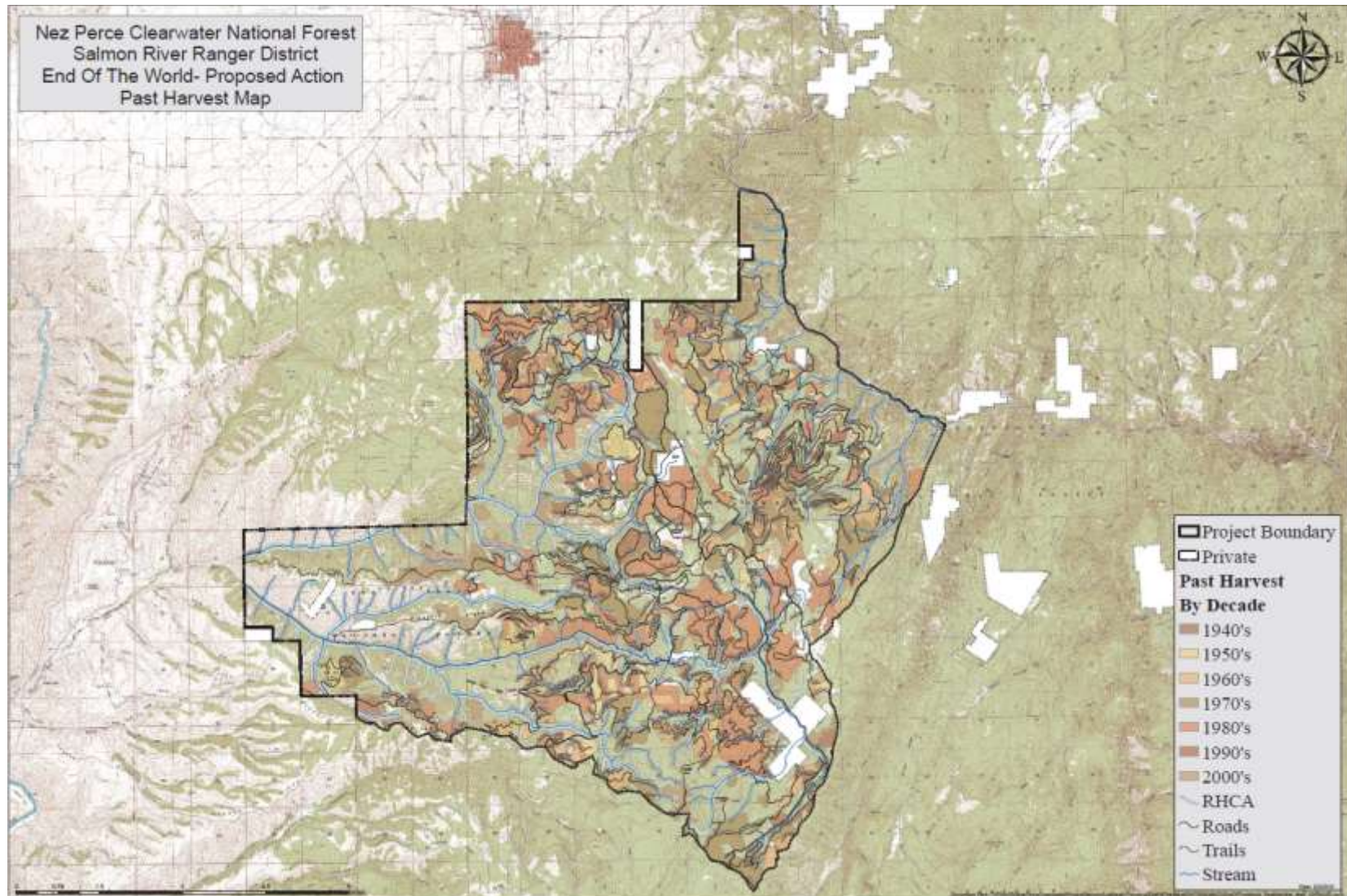


Figure 15: End of the World Project – Past Harvest Map

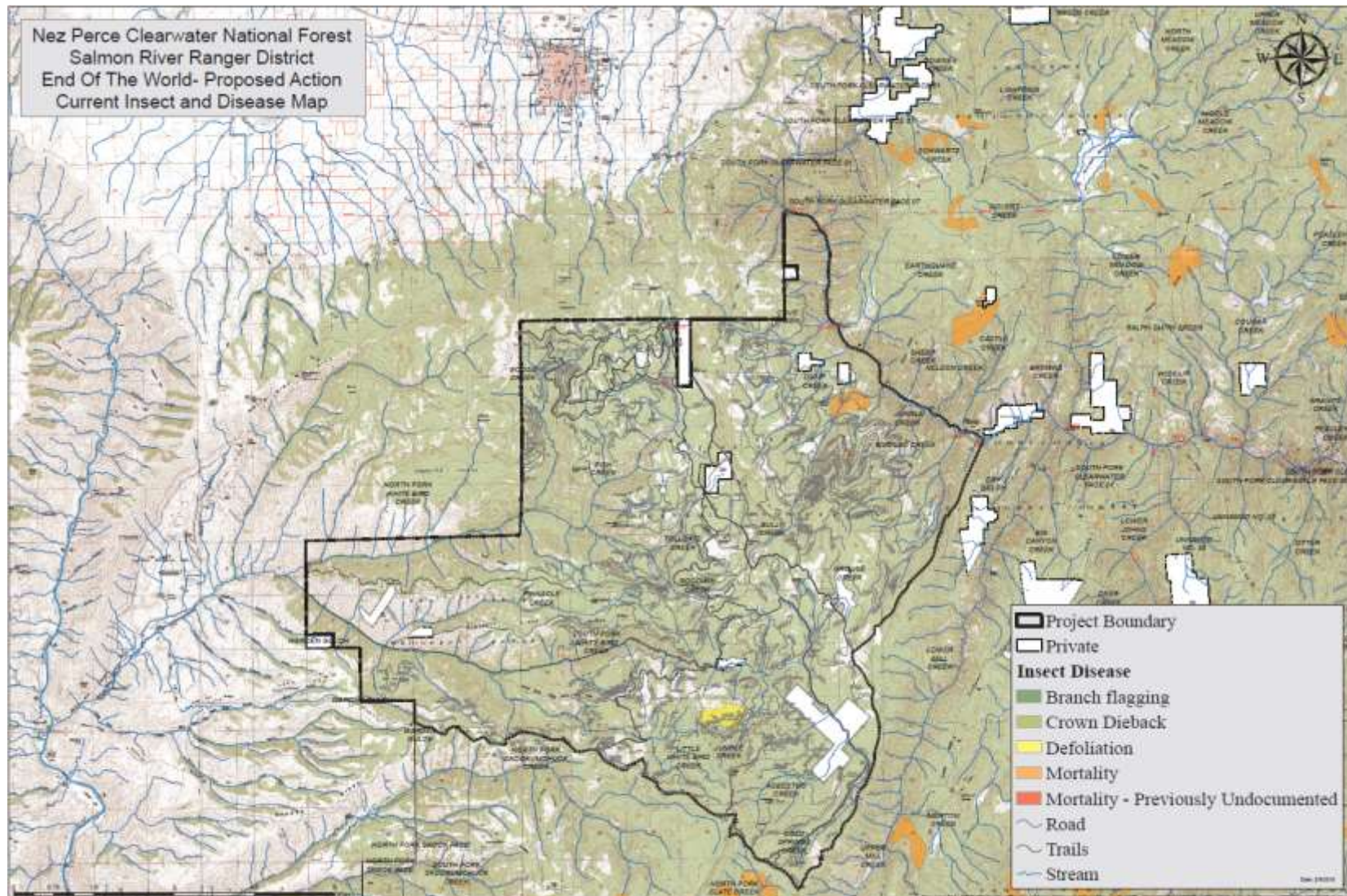


Figure 16: End of the World Project – Current Insect and Disease Map

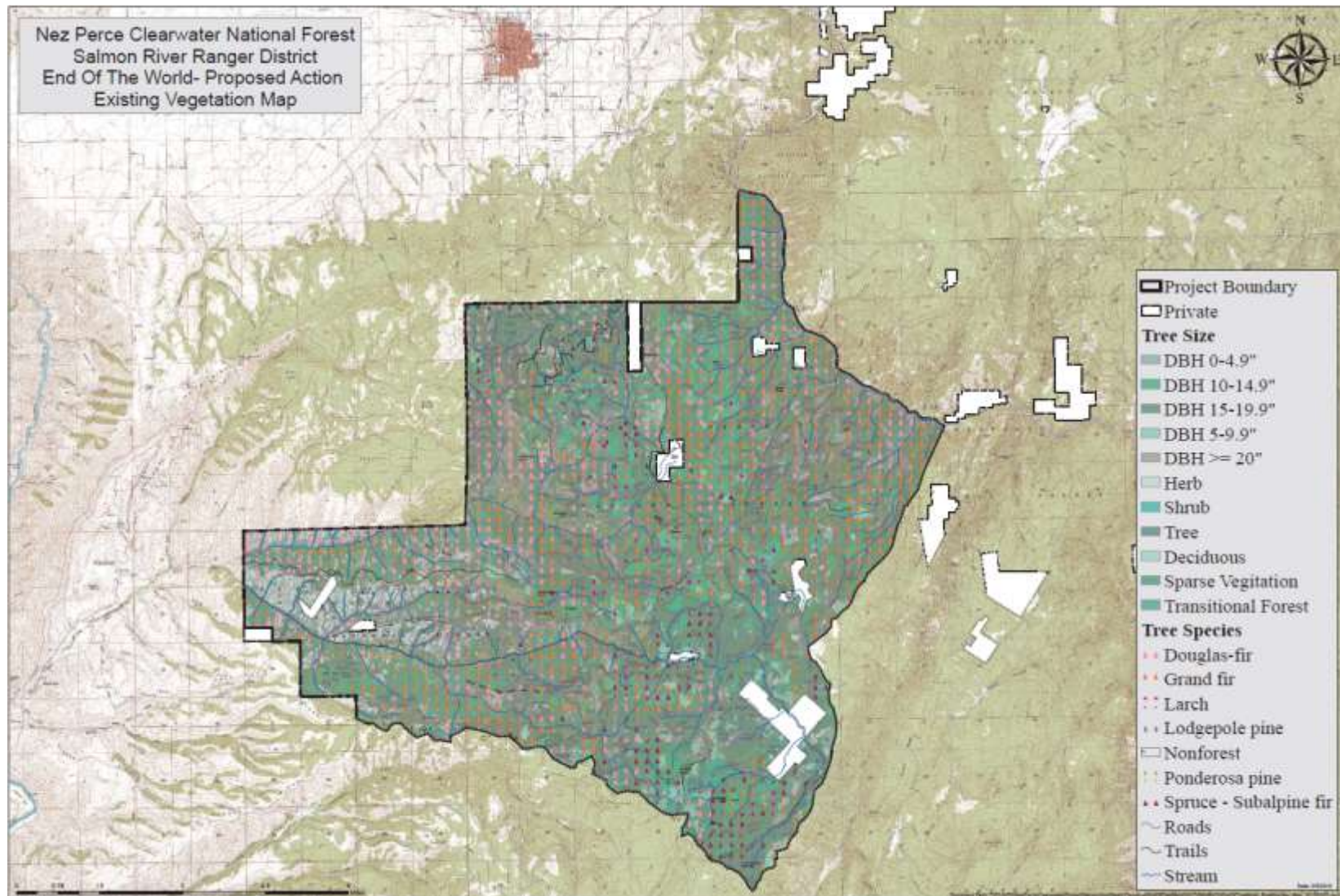


Figure 17: End of the World Project – Existing Vegetation

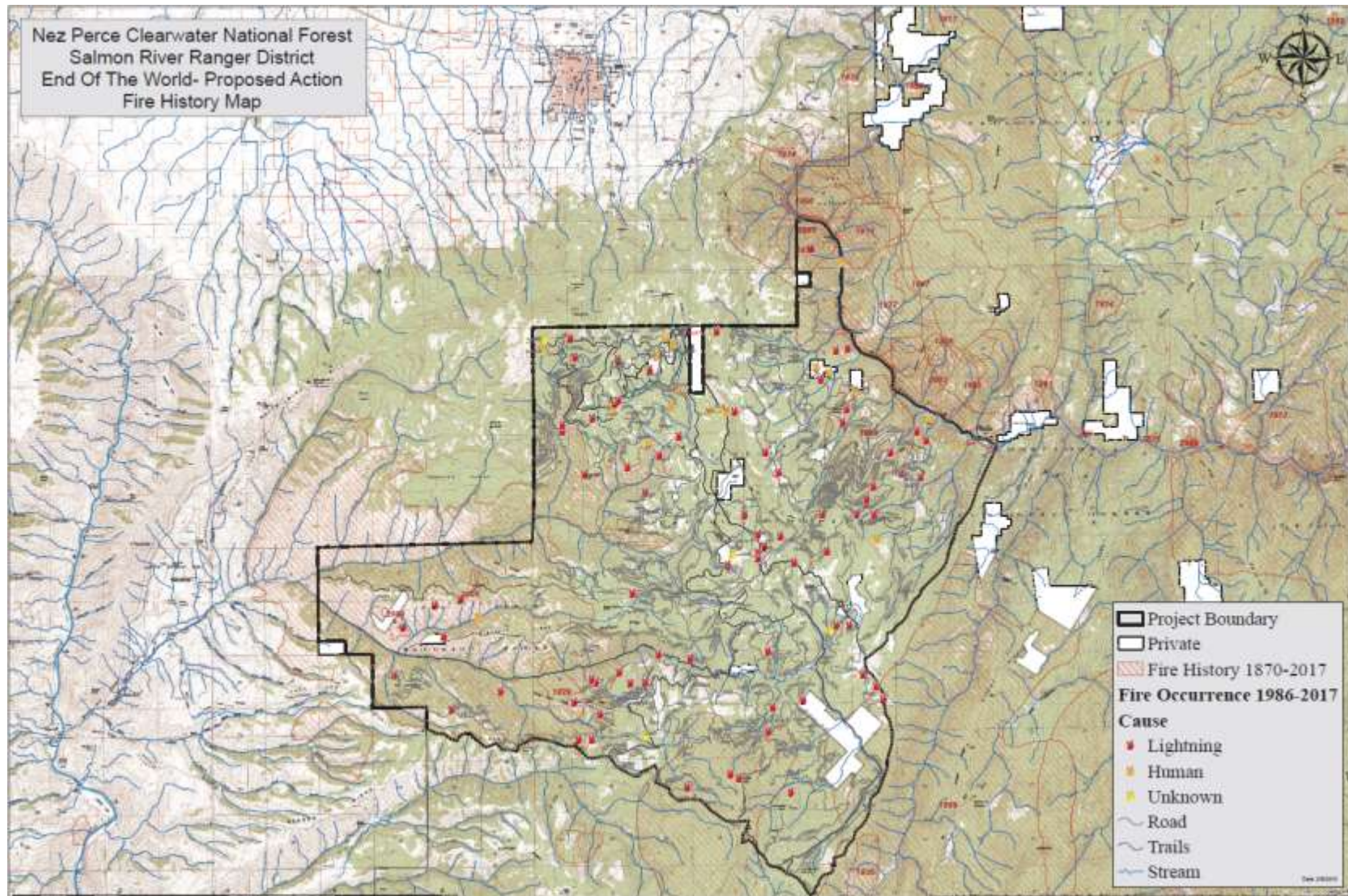


Figure 18: End of the World Project – Fire History Map

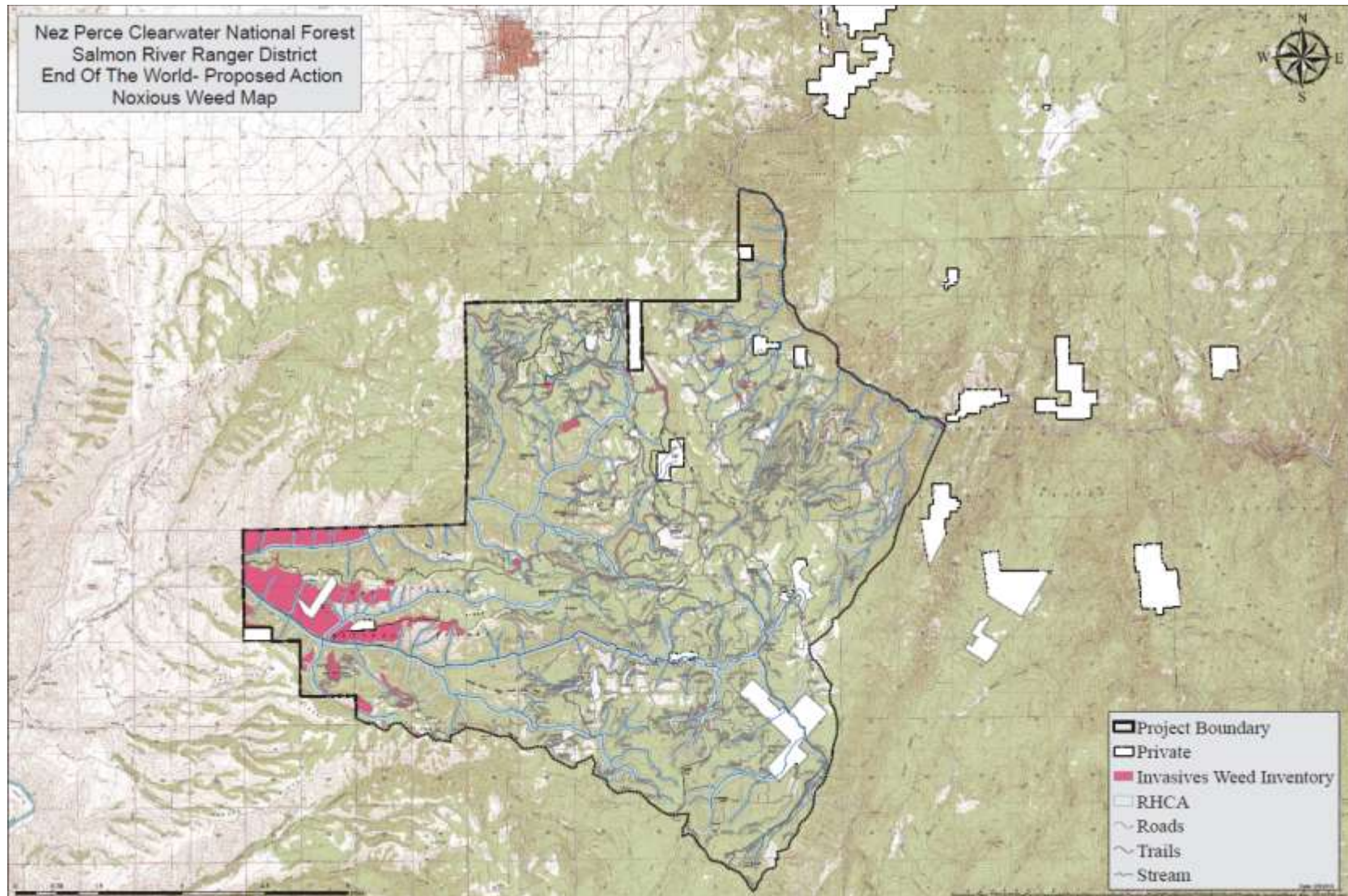


Figure 19: End of the World Project – Current Invasive Plant Species Inventory Map

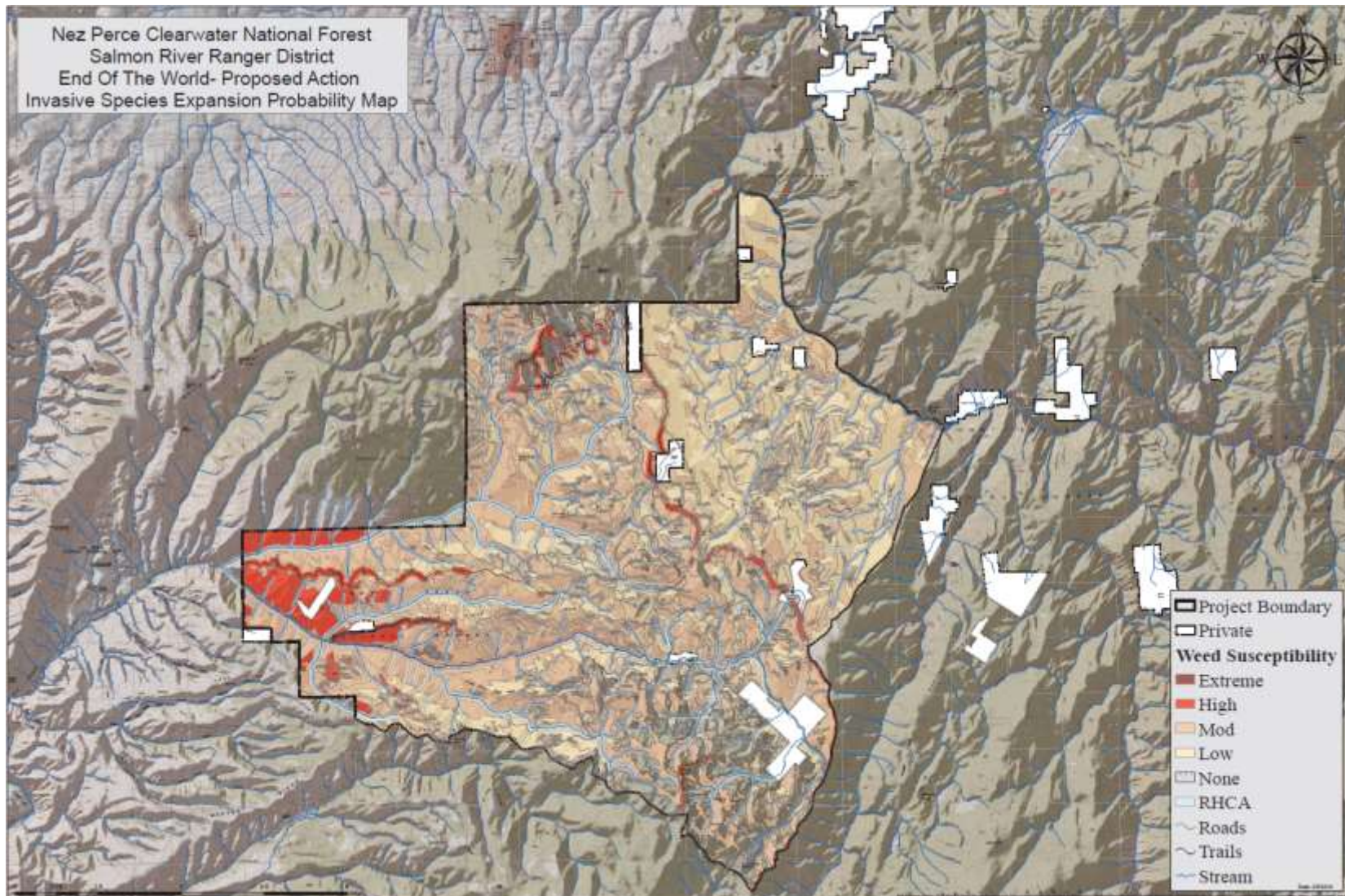


Figure 20: End of the World Project – Invasive Plant Species Expansion Probability Map

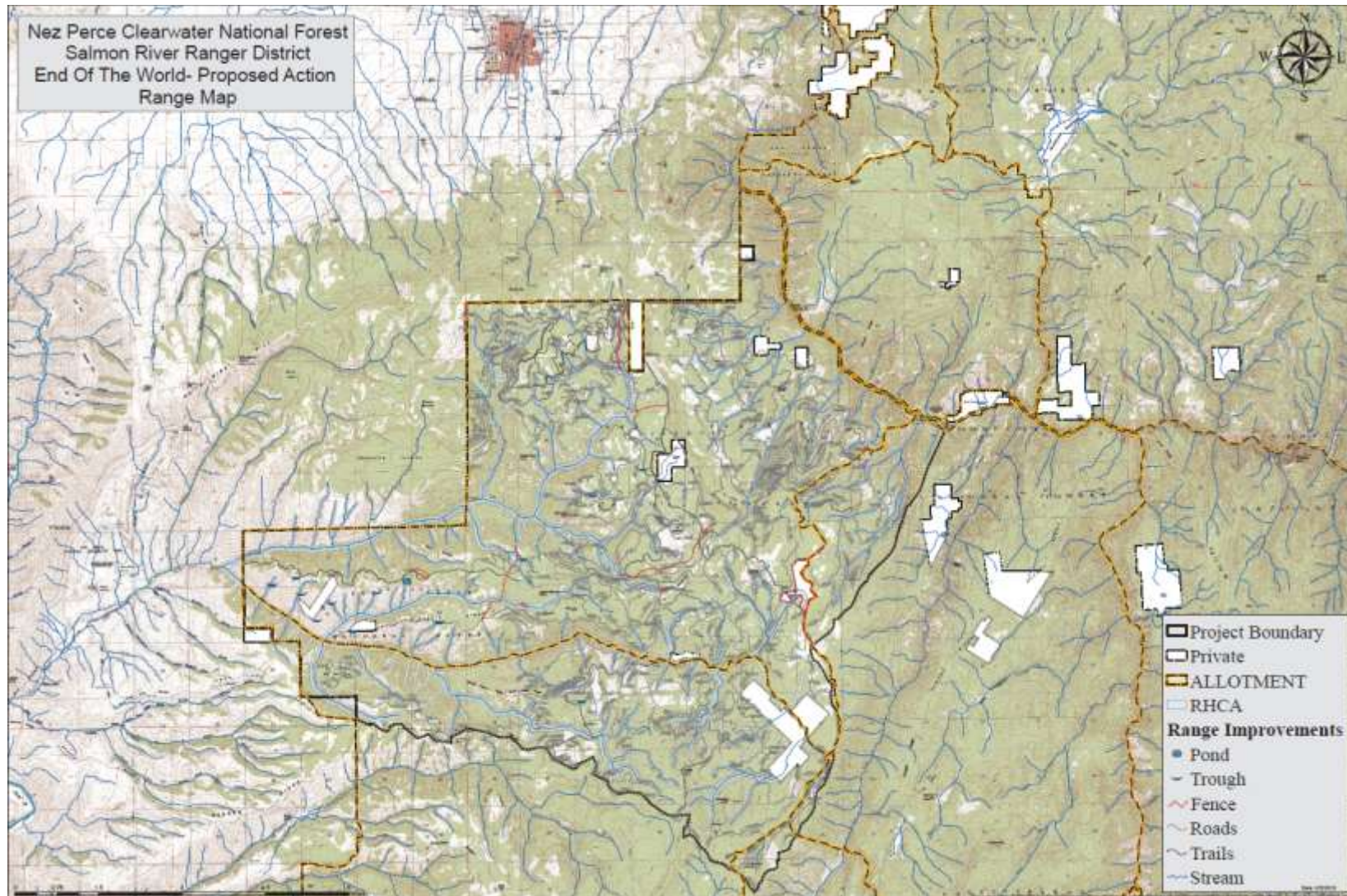


Figure 21: End of the World Project – Current Range Allotments and Improvements Map

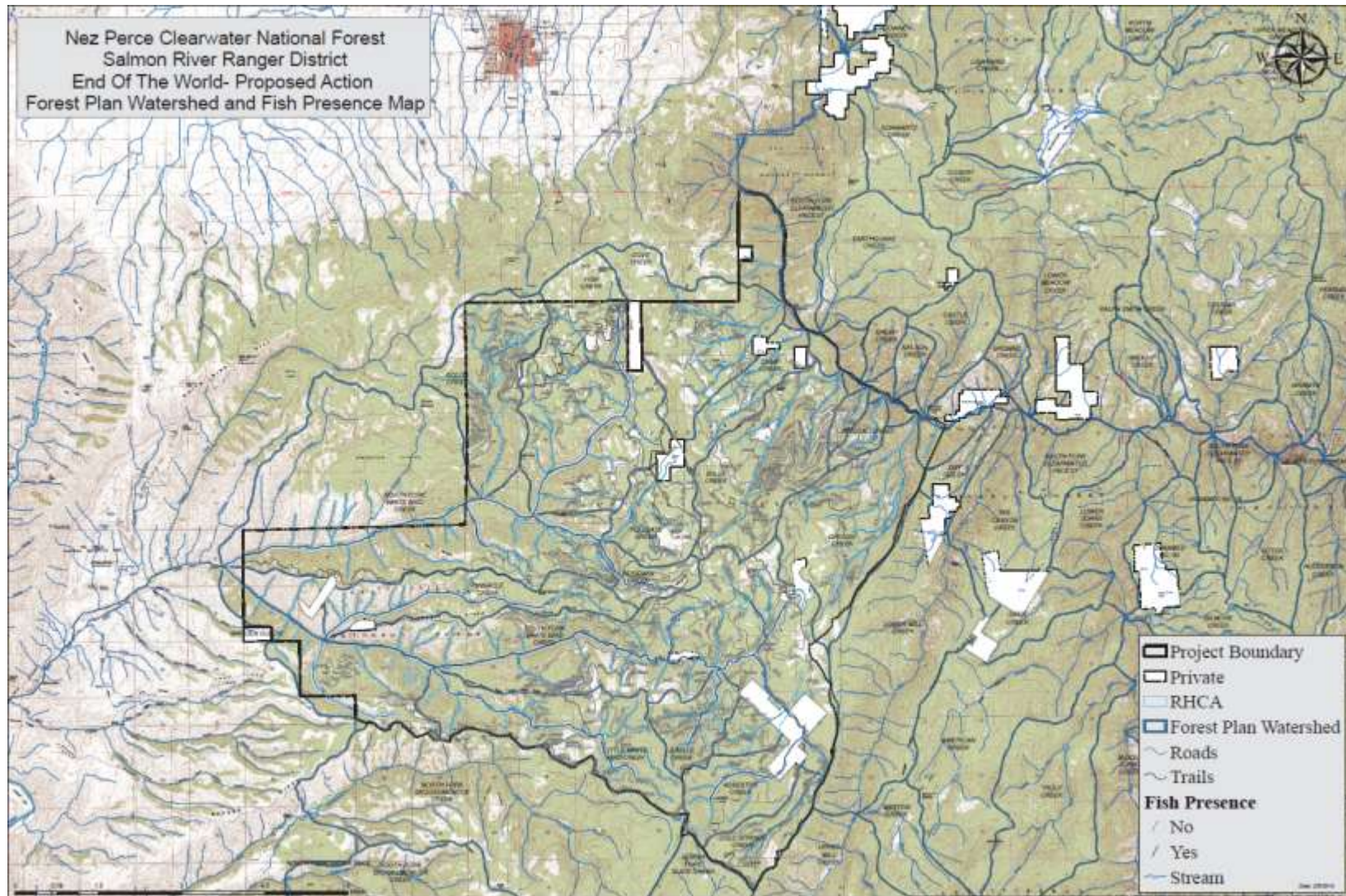


Figure 23: End of the World Project – Forest Plan Prescription Watersheds and Fish Presence Map